The Mining Journal

Established 1835 — Railway & Commercial Gazette

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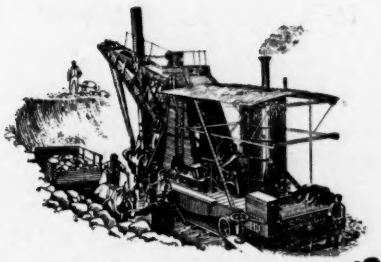

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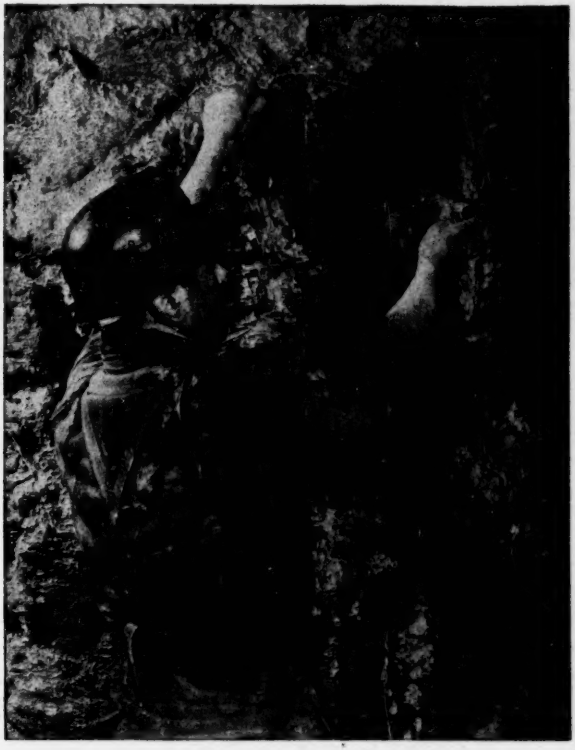

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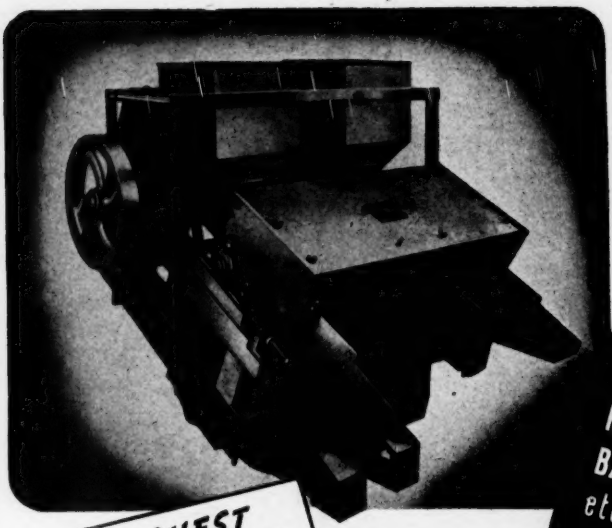

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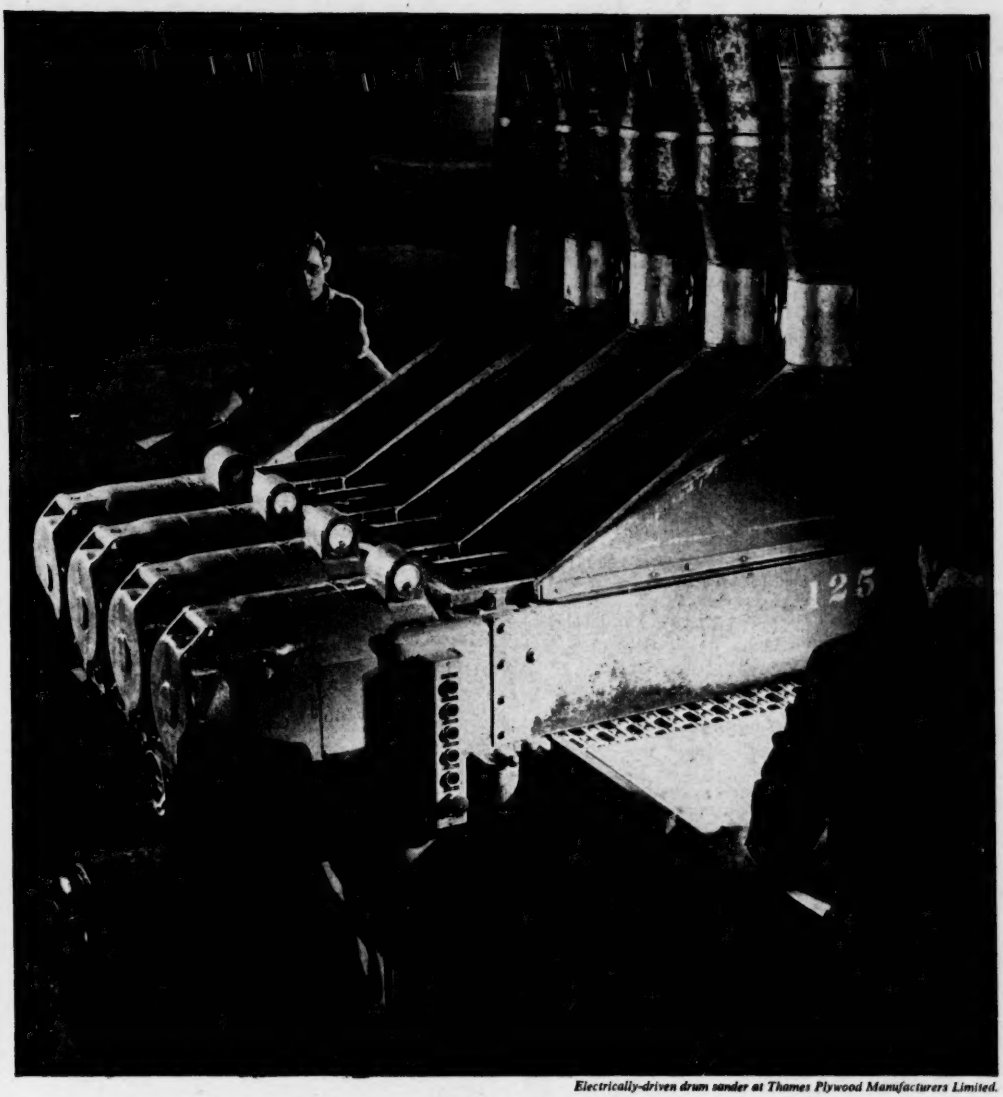

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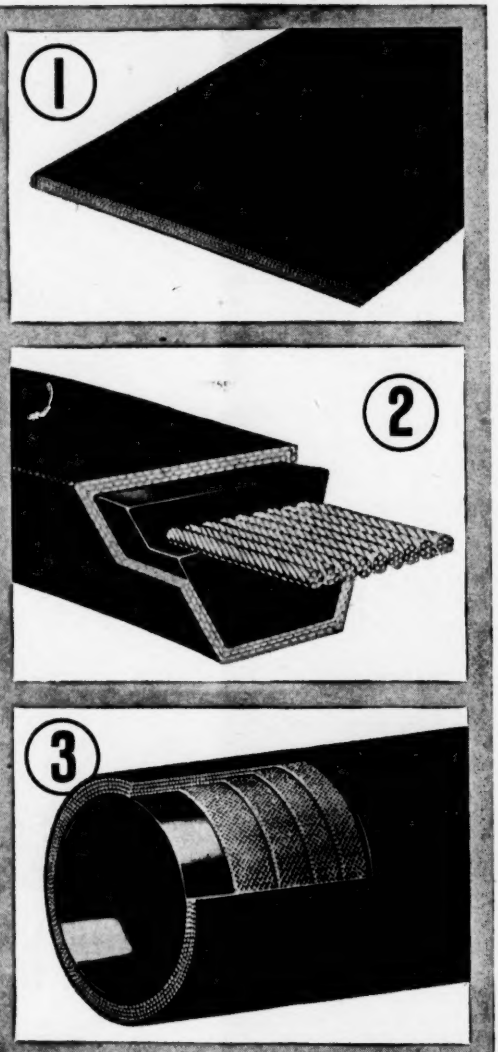

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NOTES AND COMMENTS

New Mining Possibilities in Nigeria

A preliminary report on atomic and tantalite-niobate possibilities in Northern Nigeria by Dr. R. A. Mackay and Mr. K. E. Beer of the Geological Survey of Great Britain, at the instance of Dr. C. F. Davidson, Chief Geologist of the Atomic Energy Division, in collaboration with the Geological Survey of Nigeria, has been published this week through the medium of the London Geological Survey and Museum. The report was initially submitted to the Ministry of Supply in November, 1950, and that Department has now requested that after adjustment to meet recent price increases, it should be placed on open file. The Report describes certain Nigerian pyrochlore-bearing granites which are a possible source of uranium and niobium with a possible by-product value in cryolite. Pyrochlore, a fluoniobate of sodium and calcium is the essential radioactive mineral.

Of the deposits examined, only the granites of the Kaffo Valley are regarded as of even potential economic interest. When the report was prepared, it appeared that even these could not be profitably exploited, but subsequent rises in the price of uranium and niobium ore brought them within the range of possibility. Tests so far have failed to extract pure pyrochlore from the crushed granite, and a question now arising is whether separation by ordinary physical techniques to give satisfactory results can be attained. If these extraction difficulties can be overcome a large and important source of uranium and niobium should become available within a British Colony, and it is in the hope that release of details of hitherto secret geological studies will stimulate interest by the mining industry.

According to an introductory statement by the Atomic Energy Division of the Geological Survey and Museum of Great Britain, the value of the contained minerals per ton of ore materially exceeds the worth of a high-grade gold ore. According to the report, the current price for uranium, apart from various production bonuses, is 35s. per lb., and of a 62½ per cent columbite concentrates £1,000 per ton. The report itself places the value of the rock at the equivalent of an 8 dwt. gold ore, which can hardly be described as "materially exceeding the value of high grade gold ore," but it is possible that ,especially after allowing for production bonuses, and recent market appreciation that the value of £5 2s. per ton for the niobium-tantalum and uranium oxide may be exceeded. In this estimate, no account is taken of cryolite values, which, assuming a 50 per cent recovery of the 2-4 per cent of the cryolite present in the rock, might add a further 15s. to 30s. per ton to the value of the ore.

As regards methods of concentration, the report points out that these Nigerian deposits differ from the uraniferous sedimentary shales and phosphorites hitherto regarded as the main source of uranium production, in that uranium is not uniformly distributed, and therefore established ore-dressing methods may be practicable in place of the leaching processes required to extract uranium from the uniform occurence in the shales and phosphorites. As the uranium at Kaffo is almost entirely present in a single mineral phase, simple physical techniques may prove successful. The uranium content of 120 grammes per ton is said to be of the same order as that usual in the shales and phosphates—taken to be 100-200 grammes—together with 2,600 grammes of $(Nb, Ta_2)O_5$ per ton, to say nothing of the possibility of cryolite. Thus careful study seems called for.

As regards the extent of the Kaffo Valley deposits, the reserves of uranium and niobium containing rock are very large, but whether sub-marginal remains to be proved. The proved radio-active area is estimated at 195 acres averaging 0.012 per cent U_3O_8 by chemical determination. This is said to be equivalent to 707,500 tons of rock per foot of depth, and the matter of most immediate importance in field investigations is to determine the extension in depth and the possibility of secondary enrichment affecting the near surface deposits. So far 117 outcrop samples and 120 pit samples up to a depth of 25 ft. have been made, showing little variation. The Report recommends the sinking of six prospecting shafts to a depth o 150 ft. unless the ore dressing researches at Harwell prove quite unpromising. Estimates of output on the basis of 3,000-4,000-5,000 tons milled per day with the possible recovery of 75 per cent of the uranium and niobium-tantalum contents are given but the Kaffo Valley is not well situated for large scale operations, as it is badly situ-

ated for water and power supplies, at any rate at present, and labour on this scale of operations might be a difficulty.

The Report reveals prospects of economic potentiality in the Kaffo Valley granites. More than that it is impossible to say at the moment, though in view of the date of the report, ore-dressing research at Harwell and the proving of the deposits may have made more progress than is revealed in the Report. These Nigerian studies illustrate what is no doubt occurring in many other parts of the world where such great stimulus has been applied to the prospecting for atomic minerals. In view of the final objective of such research, the possibility of producing atomic energy which can be utilized as a source of industrial power, the question of the cost at which these materials can be secured is, of course of much greater importance than were they to be regarded merely as a potential source of atomic energy for purposes of war.

Incidentally, in the report on the petrography of the Riebackite-Granites of Nigeria, there is an interesting note, on the occurrence of tin in buried leads under the basalts which covered the old river valleys during the Pleistocene and more recent periods, and they are said to be attracting growing economic interest. So far only the recent gravels of the outlying granite masses are worked.

Uranium and Health of Miners

Although the presence of uranium in the gold mines of the Rand was first recorded in 1923, the disclosure at that time was accepted as being of merely academic interest and it was not until 1944 that detailed studies were initiated to determine the distribution and concentrations of this mineral in the different reefs in operating mines on the Witwatersrand.

Giving this information in a reply in the House of Assembly the South African Minister of Mines went on to say what steps had been taken to determine the effect of uranium dust on the health of miners. Underground observations were made, he said, on three mines by officials of the Council for Scientific and Industrial Research in 1947, the object of these observations being to determine whether radon gas occurred in the workings and whether particles of uranium were present in the air in significant quantities. The results of the tests indicated that there was no trace of radon gas present and that the dust samples taken showed no signs of radio-activity of a dangerous level. The Minister said that the work already done would be followed up by further investigations after conditions overseas had been studied and reported on by a medical officer who was at present in the United States.

Indian Quicksilver Stockpile

India at the moment has a huge stock of quicksilver, writes our Indian correspondent. After the metal was placed on the Open General Licence, import flourished and stocks in India to-day are reckoned at 3,000,000 lb., as against the normal annual consumption of India of less than 300,000 lb. The secretary of the Mercury Traders' Association of India has, therefore, represented to the Government that it would be advantageous to re-export mercury to the United States of America—thus relieving the stock position and earning at the same time, the much needed dollars. India, it is stated, can afford to sell mercury to the United States at prices much lower than those being paid by the United States to Italy and Spain.

The present stockpile is enough to last for over six years, assuming that no further imports are made during this period.

Brazil

(*From Our Own Correspondent*)

Teresopolis, May 27

The Brazilian Constitution of 1946 stipulates that the preferential right of the owner of the land to the riches of the sub-soil is dependent on the nature of the deposits. The Department of Mineral Production (D.N.P.M.) has now drawn up a Bill to regulate this constitutional clause. The project divides mineral deposits into four groups; I. Non-metallic minerals employed in the building trade, in cement, glass and pottery industries, in making fertilizing, refractory and abrasive materials and for precious stones; II. Metallic minerals, sub-divided into noble, basic and rare; III. Energic mineral substances, including petroleum, bituminous schists, coal and sources of atomic energy; IV. Mineral waters.

The owner's preferential right is assured for all deposits of the first group, except fertilizing materials, for those of the fourth group and for noble metals. In the case of basic and rare metals, fertilizers and all minerals of the third group the Bill establishes the principle of the State's preferential right to exploitation and its obligation to indemnify the owner of the land.

D.N.P.M.'s activities this year will include prospecting and measuring of the apatite deposits of Ipira, Bahia, and surveying and mapping the Poços de Caldas plateau, Minas Geraes, with special attention to zirconium, potassium and bauxite deposits.

The National Council of Mines is examining projects to establish the manufacture of alkalies in Sergipe, the industrial exploitation of the magnesite deposits in Ceará and the preparation of mineral fertilizers.

The Governor of the Amapá Territory has signed a contract with a Brazilian mining company, *ad referendum* of President Vargas, for the exploitation of the chromite deposits at Mazagao (see *The Mining Journal*, Dec. 7, 1951). The reserves are estimated at 150,000 tons with 54 per cent of chromium.

A company is being organized to exploit a deposit of manganese on the Aripuanan River, in Amazonas, 360 miles from Manaos. Its existence, reported some time ago, was confirmed this year, when samples examined by D.N.P.M. showed 49.3 per cent Mn.

Although asbestos occurs in Pernambuco, Rio Grande do Sul and Rio Grande do Norte, the only deposits at present exploited are those in Bahia, particularly at Poçoes, and in Nova Lima and six other municipalities of Minas Geraes. In 1950 Bahia produced 420 tons and Minas Geraes 950, while 8,434 tons were imported from U.S.A. and Canada. Imports increased by 2,666 tons in 1951, the average price per ton rising from £71 10s. 5d. to £85 3s. 2d. Expanding demand, rising prices and rumours that exports from U.S.A. may be restricted are provoking increased interest in exploitation of Brazilian deposits, where both long and short fibre are common. Asbestos appears in Brazil as a result of alteration in amphibole rocks. At Poçoes, Bahia, the occurrence is of the chrysotile variety.

American importers are urging the U.S. Government to finance exports of machinery and assist technically in developing Brazil's mica deposits. The American Government plans to form reserve stocks and negotiate standard prices for Brazilian mica.

Twenty magnesite deposits exist in S.W. Bahia and Central Ceará. According to Alfred Bodenlos, of the U.S. Geological Survey, in both districts they are massive lense-shaped replacements of either a dolomite or limestone formation of pre-Cambrian age. The magnesite is crystalline and resembles dolomite marble.

Revised E.P.L. Provisions

The Committee stage of the Finance Bill has ended; it has produced an unusually large crop of amendments and a large number of promises to examine points raised. The mining industry has such a large interest in these amendments to the provisions of E.P.L., and in the promises of examination before the Report stage that a survey is necessary to bring up to date our article published on April 4. The changes made have led to an even greater complexity than before and there will be little quarrel with the accusation made in the House of Commons that the tax will make tremendous difficulties not only for the Inland Revenue but for accountancy staffs everywhere.

The modifications to the general E.P.L. provisions must be noticed, otherwise the special mining reliefs cannot be studied.

GENERAL PROVISIONS

The most convenient starting point is to consider the changes of detail made in the original proposals. Standard profits are now to be calculated as the average of any two years in the series of 1947, 1948 and 1949; the original proposal was to take the average of all three years. E.P.L. will still be payable at 30 per cent of the excess profits, that is to say the margin by which total profits exceed the standard profits. But instead of limiting the amount of E.P.L. payable to 18 per cent of the total taxable profits (standard and excess profits together) a company shall now pay up to only 15 per cent. The original draft of the Bill allowed 10 per cent on any new capital or on profits ploughed back to be added to the standard profits; the percentage is now 12 per cent. The minimum standard profit was reckoned earlier to be £2,000, but by raising this sum to £5,000 many small companies escape the effects of the levy.

Two entirely new principles have been introduced. Where standard profits were low in relation to taxable profits, companies were given the choice of abandoning that profit standard in favour of reckoning 8 per cent on the paid up capital. A third choice has now been conceded. Companies may now select 8 per cent on net assets, including investments and surplus cash, and the net assets can be as they stood either on December 31, 1946, or December 31, 1951. And adoption of this method does not preclude a company from having the additional benefit of allowances for new capital raised, for profits ploughed back since the base date, or for money borrowed.

A concession has been made for borrowed money. In addition to allowing interest on loans to be deducted in calculating profits for any chargeable periods, companies will now be able to add 4 per cent on the loan to the standard profits. This concession was first hailed with delight, but it is not now considered a gift to the equity holder; it is believed to be the necessary consequence of the Inland Revenue's insistence on considering the amount payable in tax as undistributed profits.

Thus, there are three methods of calculating the basic standard profits; in addition, there are a number of extra reliefs which can be added to the standard, thereby reducing the amount of excess profits and hence the amount of E.P.L. As though the new tax were not complicated enough, certain mining companies have been granted the option on a fourth standard; certain reliefs have been further modified for groups of metal mines and oil wells and new reliefs have been offered.

SPECIFIC MINING RELIEFS

The provisions relating to specific mining reliefs fall under two heads: that which has been modified and those which have been introduced for the first time. The extra allowances for metal mines and oil wells were, as explained in the earlier article, two additional points for those sources which had a life less than 60 years and more than 30 years and four additional points for those with a life of less than 30 years. The additions are now to be three additional points for the longer-lived properties and six points for the shorter-lived concerns. The distinction between metal mines which qualify and non-metalliferous mines which do not, caused much criticism from all parts of the House. An assurance has been given that the point will be considered before the Report stage, but it was emphasized that no promise of extension was to be inferred. The method of dealing with a revised estimate of the life of a mine was subjected to heavy fire and reconsideration has been promised.

The new provisions limiting the payment of E.P.L. to 15 per cent of taxable profits was noted above under the general provisions. Companies carrying on either the whole or substantially the whole of their trade through a permanent establishment overseas will be liable to pay up to only 10 per cent of their total profits.

Some allowance is to be made for increased output since the standard period. It can be given to companies producing metals, oil and asbestos—though an extension here is also under consideration—provided that the Treasury certifies that an expansion of output was in the national interest. Apparently the national interest will not be limited to the rearmament drive. It would include, for example, the balance of payments problem. The Solicitor-General gave an example of how this allowance would work.

Normal 1,000 tons at £50 p.t. profit	£50,000
Abnormal 1,200 tons at £70 p.t. profit	£84,000
Excess profit	£34,000
Due to increased output	£10,000
Due to higher prices	£24,000

If the Treasury certificate is granted, this hypothetical company can deduct £10,000 from the chargeable profits. This manner of dealing with greater output differs from that followed in the days of E.P.T. The real trouble will start when the Treasury tries to certify what is normal as regards output or prices.

Companies whose main business was in lands ocupied by the Japanese at any time between 1942 and 1945 have now been granted the additional option of 1949 and 1950, in calculating standard profits. But if 1950 is chosen as a base, the year 1949 must also be selected.

HIGHER PROFITS TAX

As a consequence of the extra reliefs granted by the Chancellor and in order to recover some of the revenue which would be lost, the Chancellor is raising the profits tax to 25 per cent with a rebate of 22½ p.c. on undistributed profits. The practical effect is to maintain profits tax on both distributed and undistributed profits at 2½ p.c. and to raise an extra 22½ p.c. on any distributions.

DOUBLE TAX RELIEF

A new claim is to be drafted to relieve investment trusts from paying tax on franked investment income. The relief will, according to present proposals, be limited to investment trusts. But companies owning at least 25 per cent of the capital of another business will be relieved under another clause from double tax. The plea of simplification of administration as the reason for arbitrarily choosing 25 p.c. was badly received; second thoughts on this point are possible.

COLONIAL MINERALS DEVELOPMENT—X

Cyprus

By A. G. THOMSON

A description of the mineral deposits of Cyprus, where mining is responsible for almost half the total revenue. The tenth in a series on the mineral wealth of the smaller British territories overseas.

The island of Cyprus, about half the size of Wales, lies in the Mediterranean some 60 miles from the coast of Syria. The chief towns are Nicosia, the capital, and the ports of Famagusta, Larnaca and Limasol. The population is in the region of 488,000, representing a density of 137 to the square mile.

The forests for which Cyprus was once famous have well-nigh disappeared, the limestone hills of the interior are now barren, and fertility has suffered in consequence. Though agriculture is still of critical importance to the island's economy, mining has become the premier industry and is responsible for almost half the total revenue. The principal minerals are copper and iron pyrites, asbestos, chrome, gypsum and umber.

The island's mining history began in pre-historic times. Copper actually derives its name from Cyprus; where it was mined by the Phoenicians and the Romans, whose ancient workings provided modern prospectors with useful guidance and information. Skouriotissa, the first mine to be opened in modern times, was found in the vicinity of an enormous quantity of ancient slag heaps. The island's copper occurs mainly as massive pyrites ore bodies with varying values. As a source of sulphur their importance has lately been greatly enhanced, but in general prospectors and mining companies have been mainly concerned with copper.

ECONOMIC MINERALS IN THE TROODOS RANGE

With the exception of gypsum most of the economic minerals are located in the Troodos range, which covers an area of about 41,000 sq. miles, Troodos being known to the Greeks as Mount Olympus. The bulk of the Troodos massif (omitting serpentine, gabbro and late plutonics) might be described roughly as "sheeted diabase." This rock appears to be a huge series of ancient andesitic lava flows and dykes, which are strongly folded and shattered. This volcanic and hypabyssal "pack" appears to be intruded by later hypabyssal and plutonic basic rocks, but the heart of the massif contains cores of gabbro and serpentine of batholithic size. Work done since the establishment of the geological survey in 1950 suggests that we may be dealing with a Rift Valley structure, and that Troodos is a relic of, say, an African foreland that resisted the Tauric folding of Asia Minor. The so-called "Rift" series was eroded, after which andesites and pillow lavas were extruded through new vents and fractures, and were spread out uncomformably over the upturned edges of the folded series near its outer periphery. There was a second unconformity, when the chalk and other post-Triassic sediments were deposited over the pillow lavas, but there were no further intrusions into the sediments.

From the end of the Roman occupation until 1878, when the island came under British rule, mining was neglected. In recent years production has been greatly expanded and in 1950 exports of minerals reached a total value of £5,500,000, thus setting up a record for the fourth year in succession. The importance attached to the island's mineral resources was indicated by the establishment with funds provided under the Colonial Development and Welfare Act of a Geological Survey, which started operations at the end of September, 1950. It had long been the policy of the Colonial Office to foster the island's mining industry, while leaving prospecting and development mainly to commercial companies. On various occasions, however, consultant geologists carried out investigations on behalf of the Colonial Office, the most important report being that of Prof. C. Gilbert Cullis, D.Sc., M.I.M.M., and A. Broughton Edge, A.R.S.M., A.R.C.S., B.Sc. This report was presented in 1928 and for many years was the standard official work on mining prospects.

Much valuable work was carried out in the early '40s by the Iraq Petroleum Co. Ltd., who held oil prospecting licences over a considerable part of the sedimentary series. This company produced a geological map which modified previous maps to quite a considerable extent and brought some more detailed knowledge of the stratigraphy of the island into being. Though the oil prospectors naturally paid little attention to the mineralized parts of the island, their stratigraphical work had an important bearing on the search for metallic minerals. Prospectors had long been guided by a theory put forward by Cullis and Edge, who noticed that very often pyritic bodies were found close to the junction of the pillow lavas and overlying sediments. They concluded that the pyritic mineralization was later than the pillow lavas and marls and that the latter had formed an impervious cover resulting in deposition of the pyrites as a replacement of the lava at or close to the lava and marl contact. From this theory of origin it followed that the most promising areas for prospectors were in the immediate vicinity of the junctions. The stratigraphic work carried out by the oil companies showed that the sediments overlying the lavas were by no means uniform in age, while subsequent work by the recently established Geological Survey and also by the mining companies suggests that the ore bodies, while younger than the pillow lavas, belong to that volcanic and igneous episode and are older than the marls. The practical significance of this extension of knowledge is that the possibility of finding ore bodies has been widened. The Geological Survey is at present endeavouring to obtain a better geological picture of the Troodos massif, which might have an important bearing on future exploration.

THE MINING COMPANIES

Except for a short period during the depression of the early 1930's, prospecting and development have been vigorously carried out by the principal mining companies. The Cyprus Mines Corporation (an American company) owns the Skouriotissa mine, which has been closed down not because the ore was exhausted but because it had become difficult to work on account of the large number of ancient workings with which it is studded. The corporation also owns the large Mavrovouni mine, ore from which is railed to a treatment plant at Xeros, where cupreous concentrates, cement copper and pyrites are prepared for export. Before the war the Corporation's output of pyrites was sold to Europe, so that when this market was shut off in the early years of the second world war, operations had to be suspended. An acid leaching plant to improve copper extraction from the ore has recently been completed.

Another company with extensive pyrites interests is the Hellenic Mining Co. Ltd., whose main output is at present derived from the Kalavasos mine. Ore from this property is railed to the coast where the crushing and washing plants

are located. The Hellenic Mining Co. Ltd. also operate the Sha mine and hold other mining leases in the island. Some years ago the Pyrites Co., a subsidiary of Rio Tinto, was interested in some of the Cyprus ore bodies but has withdrawn from this field. The Cyprus Sulphur & Copper Co. Ltd. have been prospecting for a long time at Limni in the west of the island. Recently they located a new zinc-bearing copper pyrites ore body, which is at present being opened up. Nearly 33,000 ft. were drilled by the various companies during 1950 and much geophysical work was also carried out during and before that year.

Under the Colonial Welfare and Development Scheme it was originally proposed to allocate a substantial sum to geophysical exploration. The mining companies themselves have done, and in some cases are still doing, a considerable amount of geophysical prospecting both by electrical and gravitational methods, but the magnetic method holds little prospect of successful application. For this reason it appeared that there was less need than had been thought for investigation into the applicability of these methods and the C.D. & W. scheme has since been modified to allow more geological work to be undertaken.

GEOLOGICAL CONSIDERATIONS

A general reconnaissance of the island with special reference to the Troodos massif has been carried out by the Geological Survey, and the principal mines and mineral occurrences have been examined. Detailed mapping of selected areas has commenced on a scale of 1:5,000. So far a volcanic inlier at Trouilli, covering an area of about 20 sq. miles east of the Troodos region, has been mapped, as well as another area of about 50 sq. miles in the form of a strip 12 miles wide which includes the main pyrites mines of Mavrovouni and Skouriotissa.

In common with many other massive pyrites bodies, the oxidized portions of the Cyprus deposits form very large striking red gossans at the surface. About 1935, it was discovered that these gossans often contained very rich concentrates of gold. This led to the intensive prospecting and working of any gossan outcrop that might contain gold, and for a number of years the island's gold output was quite considerable. The honeymoon is now over, however, because all the main gossans have been thoroughly investigated. Had there been a Geological Survey in existence during the peak years of gold production, much valuable information might have been obtained from the structure of these gossans when they were being opened up. Now the workings are just holes in the ground and most or all of the geological evidence has been obscured.

DEPOSITS AND METHODS IN PRECIS

Chrysotile asbestos and chrome both occur in association with serpentine in the Troodos region. The former is produced by Cyprus Asbestos Mines Ltd. from large quarries at Amiandos. The asbestos-bearing rock is quarried and treated in primary and fibre mills, the graded fibre being transported to Limasol for export. In 1950, over 16,000 tons of asbestos fibre was produced.

Deposits of chromite in the Troodos area are worked by the Cyprus Chrome Co. The ore is transported from the mine by an aerial ropeway to a concentrating plant where the low-grade material is sorted and concentrated, the high-grade ore being exported in lump form.

Gypsum is quarried in many parts of the island and is exported either in the crude state or after being ground and calcined as plaster-of-paris. A gypsum mining licence was recently granted to the newly formed Gypsum and Plasterboard Co., which has opened up a large quarry and will manufacture stucco and plasterboard planks. In 1950, this company shipped the record amount of 50,000 tons of gypsum rock.

Umber is produced in surface and shallow underground workings, mainly in the Larnaca district. Part of the output is exported raw, the remainder being first pulverized and graded into the desired shades. The devaluation of sterling has considerably improved the prospects of this industry, which has been meeting strong competition from synthetic products.

Like many Mediterranean countries Cyprus has hot, dry summers and short winters with frequent storms, so that conservation of water plays an important part in the agricultural economy of the island. A strong Water Department was therefore established some years ago, its first director being seconded from the Geological Survey of Nigeria. This department has done some geological work in pursuance of its functions in finding and conserving the water resources of the island.

New American Metals Refining Techniques

Basically new treatments of ore concentrates to produce pure metals were announced recently by the President of the Chemical Construction Corporation of America. The following article gives information of their development.

Although several of the many applications of these processes have now been prepared for commercial practice, it is nevertheless pointed out that the commercial application of each is presented as requiring specific technical adaption and data at the pilot stage. This factor is intended to provide for engineering design, despite extensive fundamental research and development of the techniques which has covered a wide field of metallurgy. The methods replace the more traditional smelting and refining techniques.

HIGH EXTRACTION PERCENTAGE

One important development which may soon find commercial application is a new process for the production of pure copper powder from any form of copper scrap, brass scrap or blister copper. It is claimed that the process achieves an extraction which approaches the 100 per cent standard, while the product at a purity of above 99.9 per cent meets all standards for oxygen free, high conductivity electrolytic copper. The process is represented as having brought forth major development difficulties because of the complexity of the chemical research involved. The final development was achieved by the Chemical Construction Corporation during two years of close collaboration with Chemetals Corporation.

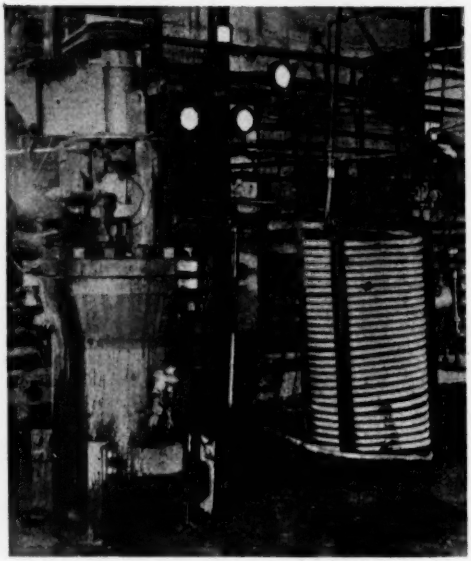
Costs of scrapping existing facilities may be erased in approximately three years during the conversion period from application of the old smelting and refining methods to use of the newly developed chemical processes.

Other financial benefits forwarded are the fact that material requirements are moderate in quantity and reasonable in cost, with the result that the commercial plants designed may in some situations be built at the site of the mine. Transportation costs are thus materially reduced. In other considerations of the possible benefits provided by the use of the new processes, Major-General Porter has pointed out that smelters and refineries are now often hundreds of miles apart, and that time lags in production which extend over many months can result in

inventories of partially processed material. By employment of the new processes, however, costs of maintaining the intermediate inventories, with the hazards of forecasting future metal prices as well as smelting and refining dislocations may in most cases be eliminated. The processes permit a close integration of the time factor.

OPERATIONAL METHODS AND PROCESS RIGHTS

Refiners using the new processes will prepare a concentrate of the ore by conventional flotation methods. The concentrate is introduced as a slurry into an autoclave together with water and an acid or ammonia. From the resulting leach solution the individual metals are recovered by utilization of suitable reducing agents. By a variation of conditions during the treatment, the component metals contained in the ore are separated to be finally produced separately as pure powders. These may be pressed into forms ready for distribution or extruded as rods or pipe, as in the case of copper.



Autoclaves flanking the coils are the heart of the process

The Chemical Construction Corporation shares with Sherritt Gordon Mines Ltd. the rights to many of the processes. The latter company has during the last four years contributed to the overall project by support of certain portions of the research programme, as well as by the development of new processes and by building and operating a pilot plant at Ottawa.

Rights to the copper scrap and manganese processes are shared by Chemical Construction with Chemetals Corporation. In 1951 Chemetals began its collaboration by the development of a technique for the production of sintered manganese oxide from low grade manganese ores. The process is to be extensively piloted in the near future by an endeavour jointly undertaken by Chemetals and Chemical Construction.

Major-General Porter has stated that the immediate effect of the new processes will not necessarily be productive of lower metals prices. The current financial standing will be maintained because of the insistent demand for metals. Yet reduced metallurgical treatment costs will permit the economical mining of lower grade ore bodies, a factor which in turn will allow a considerable increase in metals production.

In collaboration with Sherritt Gordon Mines Ltd., a nickel-copper-cobalt process has been researched and piloted for that company's Lynn Lake properties. The initial commercial use of one of the processes will begin this summer when Chemico expects to complete the erection of a cobalt refinery for Howe Sound Mining Co. near Salt Lake City, Utah. The project will involve an expenditure of $2,500,000. It is considered that the plant will increase the world cobalt output by 40 per cent. Currently, the major source of cobalt in the world is Central Africa. The Howe Sound plant will process 35 tons of 20 per cent cobalt concentrates daily from a property belonging to the company in Idaho, and the resultant production will total an annual output of some 2,000 tons of pure cobalt. This figure alone approximates 50 per cent of the total consumption of the United States in 1950.

At the mine of the National Lead Company in Fredericktown, Missouri, a refinery costing $5,000,000 is due to be completed in 1953. The designed capacity is 50 tons of concentrate per day, and the National Lead Co. plans to maintain at this plant an annual production figure of 700 tons of cobalt, 900 tons of nickel, and 700 tons of copper in addition to 7,500 tons of fertilizer grade ammonium sulphate.

In addition to these constructions, a $17,000,000 nickel refinery is at present under construction for Sherritt Gordon Mines Ltd. in Edmonton, Alberta. This refinery is considered a unique development, as here the Sherritt Gordon ammonia leach process and the nickel reduction process of Chemico are combined. The refinery is due to commence operations in the autumn of 1953, and will in the main produce nickel and small quantities of cobalt and copper from sulphide ores mined at the Lynn Lake holdings. Annual production at the refinery is expected to maintain approximately an output of 8,500 tons of nickel, 1,000 tons of copper and 150 tons of cobalt, in addition to 70,000 tons of ammonium sulphate.

THE DEVELOPMENT OF THE PROCESSES

The inception of the processes began in 1934 when it was found that under certain abnormal conditions almost pure copper was deposited around the carbon monoxide exit of an ammonia recovery scrubber. Six years later it was suggested that Chemico investigate a process which would permit production of cheaper ammonia, and a detailed report on the possible uses of cheap ammonia was made. Several of the uses were applications of metallurgy and included the leaching of copper ore. .

In 1945 and 1946 a project of research resulted in an important new series of metallurgical processes, with the application of these processes to sulphide ores, the largest commercial source of copper. Within two years there was developed an acid leaching and reduction process for copper which resulted in an end product of virtually 100 per cent extraction. This research established the fundamental technique for the separate recovery of pure nickel and pure cobalt powder from leach solution. The basic technique was developed for the process of acid leaching and the reduction of pure metal powders from the sulphide concentrates and many of the non-ferrous metallic ores.

Other developments resulted in the application of the Forward process, by means of which copper, nickel and cobalt were leached directly from finely ground sulphide concentrate with strong aqua ammonia and oxygen with the nickel to be recovered as an oxide. Chemico engineers found that some techniques could be combined with the Forward process to produce nickel metal as the end product and simultaneously reduce the production cost.

The Coal Industry

By F. COLIN SWALLOW, M.I.Min.E.

In the following terse article, the author points out one of the oldest truths in the world of industry—that to achieve a production quota of any standing at all a labour force must be properly led. The art of management is an intangible skill as abstract as the incongruities of human nature, and efficiency in its application can never be learned from a book of rules or white paper of legislation.

The Organisation for European Economic Co-operation pointed out in January, 1952, that coal is the major source of power of their member countries. Adequate coal supplies are, therefore, the key to economic recovery of the war-shattered western countries. But reports show that progress in gearing production to meet the true demands for coal has been disappointingly slow.

Seven years is a reasonable period for developing almost any coal mine, even a new mine. When the amazing backing of the United States and the goodwill and tolerance of the majority of the consuming peoples is realized, the failure of the member countries of O.E.E.C. to stimulate their respective coal industries to meet the urgent needs, sometimes even of only their consumers, is causing considerable alarm amongst those industrialists and trades unionists who look ahead.

KEY IMPORTANCE OF COAL

The present forecasts of production compared with the forecasts of true demand throughout the western free world disclose a trend which, if unchecked, will lead to disaster. In the United States, who hitherto have largely bridged the gap by supplying the coal so urgently needed in addition to paying for it through Marshall aid, a growing impatience can be detected with peoples who seem incapable and almost, at times, unwilling to put their own houses in order. The key importance of coal was stressed by O.E.E.C. when they appointed a special group of experts to examine the coal situation and report.

Their report disclosed that the gap between production and true demand was widening as the years pass. No possibility of reaching a balance without American charity was in sight.

The United Kingdom produces about half the total coal supplies of the member countries of O.E.E.C. Up to the outbreak of World War II, she exported some 40,000,000 tons per year. Since the war, only about one-fifth of this quantity has been available for export and even that has depended upon occasion on imports from the U.S.A. In the United Kingdom, during the past few years, when some £60,000,000 has been spent on technical improvements in British mines, developments have resulted in only trivial improvements in production and no improvements in cost. It would appear from the results that the problem is not entirely technical. Had it been entirely technical, it would by now have been solved, especially as no one disputes the ability of the technical management of the British coal industry.

Even the generous American aid programme was based upon the assumption that the main problem was technical; in fact, any idea that a production problem was insoluble by technical improvements would not readily occur to that country.

The United Nations Economic Commission for Europe has placed its own interpretation on this problem. It reports in Geneva that the shortage of capable men in the British nationalized coal industry is as serious as the shortage of coal itself. But they do not say what is meant by a capable man. O.E.E.C. in considering the perturbing nature of the conclusions reached by the special Group of Coal Experts, at last came down to hard facts by stating that the problem was not only technical but, above all, of a political character.

THE ART OF MANAGEMENT

It is worth noting that one feature of this serious situation in the coal industry is common throughout all countries where, so far, nationalisation has been tried. Only by hard experience has this feature been unfolded. It is lack of the art—the now discredited and almost forgotten art—of management. For the assumptions that success in technical examinations, or in a popular vote at the polls, are adequate substitutes for this art are having deplorable consequences. We see them at work throughout the coal industries of many countries to-day.

Management is an art, a very difficult and subtle art. It does not consist of the generation, issue and transmission of orders, which is a purely technical and elementary process, but in the choice and promulgation of policies by those who lead of such a kind and in such a way as to ensure that they are willingly followed and enthusiastically obeyed.

Nationalization has been followed almost uniformly by the elimination of those hitherto responsible for this difficult art—the Agents or their equivalents in other countries. Their place has been taken by Personnel Management Departments supported by an "appropriate" organization. In the change, the skill of the real managers of this industry, men capable of securing such a degree of cohesion and intelligent and willing obedience from those they led that in the six years after World War I Britain produced 247,000,000 tons of coal whereas six years after World War II, despite the expenditure of vast sums on technical improvements, production is still around 220,000,000 tons, has been lost. Of the production, moreover, a not inconsiderable quantity is opencast coal of low quality obtained at the cost of sterilizing vast areas of the British countryside. Even the United States seems to be no better equipped in the matter of real management than her poorer allies; the stress on technical improvement alone as the cure to the trouble is a patent of this.

THE ROMAN DECLINE

To suppose that the affairs of great international industries can be composed by committee reports is to return to the mentality of the Roman decline. Management, which is a compact of tact, subtlety, psychology, insight, sympathy, moral integrity, historical knowledge and, above all, a knowledge of the world and human nature, is essential. By all means let the coal producing industries have a modicum of the amateur element and the common touch in their management; let them, too, have a sufficiency of clerks to do the necessary checking, recording and collation; and a sufficiency of technicians and mathematicians to fulfil the urgent technical needs of the moment. But let them have also the most necessary ingredient if the present distractions and difficulties are to be solved, a little professional skill in the art of management.

Mines and Quarries in 1950

The following article contains details pertaining to the main developments in quarrying and metalliferous mining as noted in the Report of H.M. Inspectors of Mines and Quarries for the Year 1950, recently published by H.M.S.O.

Speaking generally, demand for quarried products was sufficient to enable quarries to be worked to capacity. Steady working of the larger limestone quarries was assured by the many uses for lime and its derivatives. However, some of the smaller quarries suffered in competition with larger and more mechanized units. The cement, china clay and ball clay industries flourished, much of their output being exported. There was a brisk demand for slate and roofing tiles. Labour shortage continued to be a serious problem in many quarrying districts, as a result of competition from light industries for available labour, but the rapid extension of mechanization has done much to offset this deficiency and "it is obvious that the process of substituting machines for men must continue. Indeed, there is good reason to believe that this process must be accelerated."

Dealing with mechanization in greater detail, the report states that the general increase in the mechanization of loading operations and of the excavation of the softer rocks continued. The more common machines introduced were mechanical shovels and diggers, working in conjunction with dumper vehicles. It notes that at the end of 1949 there were in use in opencast coal workings some 937 excavators, 533 scrapers, 384 bulldozers and 231 Euclid dumpers, and it mentions the use of mammoth "walking" dragline machines, in particular by Messrs. Stewart & Lloyds Minerals Ltd. in quarrying ironstone with a thick overburden at Corby, Northamptonshire.

IMPORTANCE OF SOUND PLANNING

While it should be unnecessary to stress the importance of sound planning of quarries generally, the report points out that, at some of the smaller quarries, instances have been observed where the faces have become higher than they should be for economic and safe working, largely as a result of the failure to provide access roads which would have facilitated benching as the quarry face increased in height.

Another important development noted is that deep well-drilling is increasingly finding favour at the expense of tunnel blasting in limestone and roadstone quarries.

"An interesting departure from orthodox well drilling has been introduced," the report points out, "by the Swedish Atlas Diesel Co. Vertical holes are drilled with a bit 35 mm. in diameter and articulated steel rods. At one quarry in Scotland, shot holes 86 ft. deep have been drilled regularly in less than three and a quarter hours per hole. Groups of these holes drilled at fairly close intervals are charged with one-eighth inch diameter cartridges of Polar Ammon Gelatine Dynamite and fired simultaneously with Cordtex instantaneous fuse. Excellent blasts have resulted, the face being left clean and the rock fragmentation being good."

SAFETY HELMETS, BOOTS AND GOGGLES

"Extension in the wearing of protective clothing makes only slow progress. It is a pity," the report says, "that quarry face-workers generally, and indeed others, cannot be induced to wear safety helmets." However, the wearing of safety boots is much more common. "Every man must wear boots of some sort and those of the 'safety' type are such very good value for money that they 'sell themselves.'" It is important to realize that most of the eye injuries which do occur could be averted by the wearing of goggles.

As regards the prevention of dust, the report refers to the progress made in dust preventive and suppressive measures in dressing sheds of the larger slate quarries in North Wales, and the hope is expressed that similar provision will be made at smaller quarries when necessary supplies of equipment become more plentiful. The remedial measures included extraction by low-velocity air currents at the sources of production and the use of a solution of calcium chloride to consolidate floor dust.

METALLIFEROUS MINING: LITTLE PROGRESS

The second part of the report, devoted to metalliferous mines, begins with a general reference to the state of affairs in this section of Britain's mining industry, and notes with regret that despite efforts to revive production of non-ferrous ores during and since the war, "there is little progress to report." This is followed by a somewhat more detailed review of the activities of mines situated in Cornwall, Cumberland, South Wales and elsewhere. It contains interesting details of the Billingham Mines, South Durham, where anhydrite is won for use in the manufacture of sulphuric acid. In this mine, a very important development scheme was put into being during the year under review. Although the mine already had a very modern underground haulage system, this system is, however, now being replaced by one which is expected to reduce costs and need for manpower still further by abolishing the need for a rail track. Self-tipping pneumatic-tyred 10-12 ton capacity trucks, powered by 150 h.p. Diesel locomotives are being installed in place of locomotives running on rails and hauling trains of mine cars. Four 150 h.p. and one 138 h.p. trucks were in use at the end of the year. An 85 h.p. bulldozer, a 46 h.p. dumper and a 46 h.p. tractor, all powered by Diesel engines, had also been installed. To ensure the maintenance of the necessary high standard of ventilation, a method of closely controlling the ventilation in each panel of workings has been carefully thought out: two auxiliary fans, each of 50,000 cu. ft. per min. capacity, are installed for each panel. One, in the intake airway, forces air into the working faces and the other, in the return, extracts.

Although mechanization of face work in haematite mines is not easy, some compressed-air-driven shovel-type loaders were introduced and have proved their worth, and experimental installations of shaker conveyors and double-drum type rope-operated scraper conveyors have been made. However, the main development in drilling practice in haematite mines was the extension in the use of air-leg machine supports. Thus, hydraulically-operated boring rigs have been introduced in stone shifts and hydraulic stowing of extracted areas continued to be successfully applied at Hodbarrow haematite mine.

As regards dust prevention, the report notes a welcome increase in "wet" drilling in some mines and stresses again the vitally important need for effective ventilation at the sources of dust production at surface works as well as underground. It is welcome news that "men and managements are now more dust conscious and it is hoped that a reduction in the incidence of silicosis in slate mines will result. The overall position has improved considerably and with the extension in the use of mechanical dust-extracting equipment an improvement can be expected to continue."

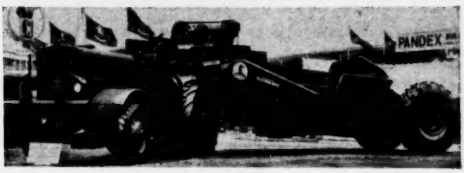
The position as regards safety clothing is similar to that in quarrying: safety boots are worn extensively, but constant pressure is necessary to ensure that safety helmets and protective gloves are worn.

MACHINERY AND EQUIPMENT

The Euclid Scraper

The Euclid Model B6 FDT Tractor B1 SH Scraper is announced by the manufacturers, Euclid (Gt. Britain) Ltd., as a tractor and scraper combination which may have either a Leyland 11.1 litre, four-stroke Diesel engine with 154 B.h.p. at 2,000 r.p.m., or a Rolls Royce 12.18 litre four-stroke Diesel engine with 165 B.h.p. at 1,800 r.p.m. fitted.

The tractor is four wheeled and basically it is of the same design as that which powers the Euclid Bottom Dump Wagon. The gearbox is a fuller model 5F 1220 with five forward speeds and one reverse, and the speed range loaded is 2.8 m.p.h. to 29 m.p.h. Helical constant mesh gearing is mounted as a unit



The Euclid Tractor-Scraper Unit

with the engine. All engine components are calculated to provide service and power, with the tractor mounted on 12.00 by 12 front tyres at 16 ply and drive tyres of 21.00 by 25 at 24 ply. The scraper hitch is a full universal Euclid type 42 H, bolted to webs of the frame channels forward of the drive axle.

The struck measure of the scraper reaches 16 cu. yd. when heaped to a 1 to 1 slope, and the main torque member of the pull yoke is a pentagonal beam of ½ in. plate. The bowl is an all welded construction of ¼ in. alloy steel plates with T bar reinforcing spacers, while the cutting edges are reversible blades 16 in. by 28¾ in. by ½ in. hard faced alloy steel plates.

Four long box section struts of 7 in. at 19.1 lb. ship channel connect the top and bottom bowl across members and the bumper box section. The axle load is transmitted by a box section axle housing tied to all four struts. Controls of the bowl lift are two Euclid single-stage, single acting hydraulic hoists, of the apron lift one Euclid single-stage, single acting hydraulic hoist connected to the apron with ¼ in. diameter multi-strand cable. The ejector lift is controlled by one single stage, single acting hydraulic hoist mounted between the ejector dump lever and the box section of the scraper axle. The scraper's tyres are 21.00 by 25 at 24 ply.

The tractor and scraper together weigh 42,600 lb. unladen. The complete unit reaches 40 ft. 11½ in. overall length, and overall width of the scraper is 11 ft.

Axial Ring Mounted Fans

An enterprising and well produced booklet from Keith Blackman Ltd. gives details of the company's ring mounted axial fans. The publication provides technical data of fans in the Tornado axial range, which comprises fans with four aerofoil section blades and with 6 in. to 16 in. diameter wheels for operating under free inlet and discharge conditions and against conditions of moderate resistance.

Three phase 50 cycles 400/440 volts supply shows the size 10 in. fan to have a speed which grades from 720 r.p.m. with air displacement 337 c.m.f. to 1,450 r.p.m. and air displacement of 671 cmf. These statistics give a power input of 25 watts up to 40 watts. Fans of the three phase group include 12 in. and 14 in. units until the largest of the series is encountered in the 16 in. with a speed of 710 r.p.m. to 1,430 r.p.m. which give an air displacement of 1,300 cmf grading up to 2,639 cmf. Power input grades from 75 to 250 watts.

The single phase fans at 50 cycles 200/250 volts supply range in size from the 6 in. to the 16 in. Overall operation figures for the group as a whole show speeds that advance from 710 r.p.m. to 1,450 r.p.m., air displacements varying between 166 cmf and 2,639 cmf, with power inputs between 25 and 250 watts. A comprehensive booklet.

A Wire Rope Clamping System

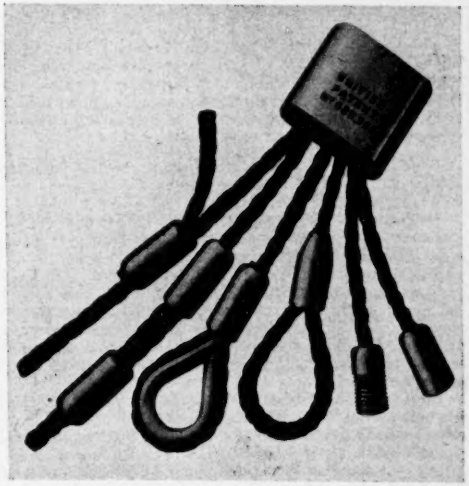
The splicing of wire ropes, always a procedure which has involved a wastage of time and material, is now claimed to have been considerably facilitated and accelerated by use of the new Talurit wire rope clamping system. By use of the original method, it was necessary for skilled labour to unravel a portion of rope which totalled as much as three or four feet in the larger diameters, and re-weave it into the unravelled portion to provide the eye or join. This procedure necessitated as much as five hours of work on the larger sizes of wire hawsers, with resultant wage cost and injury to the hands.

By utilization of the Talurit wire rope clamping system, however, it is stated that a stronger join is achieved by unskilled labour on the largest diameters of wire ropes in less than five minutes of application. In terms of percentage the system thus provides a saving of raw materials which totals as much as 85 per cent, and a percentage of time saved that is as much as 90 per cent.

In its operational method, the system provides splices in wire ropes of all diameters up to 40 mm. in the standard range and up to 60 mm. when deemed necessary. Two thicknesses of the rope are placed into the Talurit ferrule and this, with its portion of rope, is placed into a Talurit press with the appropriate swage. Correct weight pressure is exerted to mould the two thicknesses of rope to one homogeneous mass. By automatically changing the shape of the ferrule, the two thicknesses of rope are confined by cold press into the area normally occupied by one thickness.

A different type of ferrule is necessary for ropes using chrome and stainless steel. The ferrule is a copper-free alloy of aluminium containing the silicon and manganese necessary for cold pressing.

The applications of the system to the mining industry are obvious. Winding gear and haulage equipment, as well as the demands of tramming practice can be visualized as providing



Assorted Ropes After Talurit Pressing

the operations met by the new system. It is worth mention that the Talurit Wire Rope Clamping system has already been fully approved by Lloyd's Register of Shipping.

Patented in Great Britain and manufactured and distributed by Cable Covers Ltd., the complete range of Talurit presses from 22 tons to 1,000 tons, of rope capacity 1 mm. to 40 mm., will be available to manufacturers and users of wire ropes under licence. To these users of the presses the use of Talurit clamps and swages will be made available. Technical advice will be available from the Talurit division of the company.

METALS, MINERALS AND ALLOYS

Within a few minutes of the U.S. Supreme Court giving a majority verdict against President Truman in the case relating to his seizure of the steel industry, the steel workers were beginning anew their strike, terminated abruptly when President Truman took over the industry. About the same time, the quarrel between the Western Powers and Russia over problems concerning Berlin reached a new critical phase. Obviously, the way in which this quarrel goes might have a profound influence on the course of subsequent events in U.S. steel affairs. If the position in Berlin deteriorates very much more, the President might find himself armed with the emergency powers used, apparently lawfully, by his predecessors. If the Four Powers in Berlin come to some arrangement, the steel strikers will be able to go on asking for their wage increase, and employers will continue to deny that they can afford it without passing on a large portion to the consumer. Whatever happens now, it does not look like deflation for the U.S. The central problems are how long the strike will last and how much inflation will be accepted.

COPPER.—Some progress has been made in settling the Chilean copper dispute. President Gonzales has given his arbitration award in the dispute at two of the copper mines. He said that owing to the high cost of conceding the workers' demands, the companies should have a higher exchange rate for their dollars. This question of the exchange rate has long been a bone of contention between the producrs and the Chilean Government. This report from Santiago should not be taken to mean that a new rate has been agreed; caution is certainly necessary since the President's ideas on the rate have not reached this side yet.

The world price of copper is reported to fluctuate very widely. It ranges between 27.50 to 36.15c. per lb. Most business, according to a Reuter message from New York, has taken place around 32 or 33c. for non-Chilean metal. This is the consequence of the permission, reported here last week, granted by the U.S. Government for manufacturers to pass on 80 per cent of the difference between 27½c. per lb. and the world price.

Until a quotation higher than 27½c. is published in the *Engineering and Mining Journal*, the Ministry of Materials will not change its quotation of £231 per ton. When a change does take place, however, it is likely to be fairly large, for a rise from 27½c. per lb. to only 32c. would mean an extra £36 per ton, and if the higher price of 33c. is chosen the increase will be another £8 per ton, making a total uplift of £44 per ton.

TIN.—The R.F.C. has confirmed recent rumours that it has bought the bulk of Bolivia's accumulation of tin concentrates at a price equal to $1.18 per lb. f.o.b.

Members of the Malayan Chamber of Mines have been reminded that there has been virtually no prospecting in Malaya since 1930 and that as a consequence there is bound to be a serious drop in production. The acting president, Mr. D. T. Waring, suggested that from now on plants will become idle in succession as their reserves are exhausted and until an improvement in the security position allows prospecting to be resumed. He called for an adjustment in the export duty on tin, so that companies could afford the capital necessary to work new areas.

There has been some set-back in the Straits shipments in May. This was only to be expected for the April figures were the largest since November, 1950. The May total was 4,573 tons (7,093 tons). The U.S. took the largest amount for a single consumer, 1,235 tons, but the Continent took 1,681 tons, without counting 377 tons sent to the U.K. option Continent.

A strike closed the Texas City tin smelter when 500 production workers demanded higher pay. The counter-offer of about one-half of the workers' demands was not accepted.

The Bolivian Government has taken control of all metal exports including, of course, tin. The Banco Miniero is the only export agency and producers will have to sell their outputs to it for Bolivian currency.

ZINC.—The supply of zinc has improved to such an extent that the international allocations of zinc for the current quarter have been suspended and I.M.C. has announced that no allocations will be made for the third quarter of the year. These moves are being interpreted by the metal trade here as the probable forerunner of modification, if not the total abolition, of the Government restrictions on the use of zinc in various consumer goods. The commencement of the steel strike in the U.S. will affect the demand for zinc, thus hastening the day when domestic controls can be abolished. It had the immediate effect of reducing the American quotation of the metal to 17½c. per lb. Prime Western, East St. Louis, and in accordance with the Ministry of Materials new policy, the U.K. price was lowered the next day to £150 per ton. New York reports suggest that the lower zinc price may mean the re-imposition of the import duty of seven-tenths of one cent per pound. Other reports from the U.S. consider that a resumption of zinc future dealing on the Commodity Exchange is likely.

Mr. John Govett, chairman of Consolidated Zinc Corporation, suggests in his statement to shareholders that because of the many political and economic issues that are tied to the rise and fall in world commodity prices, it seems unlikely that the machinery that has been set up by I.M.C. to deal with such problems will be allowed to fall into permanent disuse.

The American Zinc Refinery Co. is to take over the Quebec Pulp & Paper Co.'s mills at Chicoutimi. The purpose of this acquisition is to convert them into a zinc refinery.

ALUMINIUM.—The first shipment of Jamaican bauxite has been loaded at Kingston, Jamaica, for the U.S.

ANTIMONY.—Antimony ore is quoted in New York at $3.25-3.50 per unit; the previous quotation was $3.50-3.70.

MANGANESE.—Bethlehem Steel has signed a contract with Companhia Industria e Comercio de Minerios for the purchase of part of the expected output of manganese from the deposits at Macapá. Production is expected to start by the end of this year and an output of 300,000 tons is estimated for the first few years of operation. At a later stage, according to present plans, production will be increased to 500,000 tons per annum. The operating company has promised to supply Brazil with whatever quantities she needs.

The price which G.S.A. is willing to pay for a l.ton unit of recoverable manganese has been raised from $2.00 to $2.30.

NICKEL.—The manganese-nickel-cobalt committee of the I.M.C. has announced that because of an unexpected increase in Norwegian nickel production in the second quarter of the year, an additional amount of 220,700 tonnes of primary nickel is available for distribution. Discussions have commenced on the plans to distribute nickel during the last two quarters of the year.

WOLFRAM.—After remaining unchanged since the end of last year, the price of wolfram ore has fallen sharply. The U.K. Ministry of Materials' buying price of wolfram ore has been reduced by 20s. to 465s. per l.ton unit c.i.f. This change brings the British price more into line with the American quotation. The Ministry's selling price of 500s. per unit to consumers is unlikely to be reduced, until stocks of metal bought at higher prices than those now ruling have been run down.

DIAMONDS.—The price of industrial diamonds is likely to fall, according to J. K. Smit & Sons. There are a number of reasons for this forecast. Although British consumption of industrial diamonds is now only one-half of the quantity used during the war, it could be reduced considerably by Government instructions. The appraiser for the West African & Gold Coast producers reduced their valuation by 20 per cent and the offerings of the Tanganyika producer are expected to affect the price. The U.S. Government has restricted the stock of diamond bonded wheels to two months' consumption: this decision has led to a cancellation of orders. Finally, controls to prevent the smuggling of diamonds to the Iron Curtain countries are being tightened up.

GOLD.—The Western Australian output of gold in April was 50,269 f.oz. (52,892 f.oz.).

The Bill extending the Canadian Emergency Gold Mining Assistance Act until the end of 1953 has passed the Commons in Ottawa. Many members criticized the Bill on the grounds that the only real solution to the producers' difficulties was to get the U.S. to increase the price of gold.

Gold production in Ontario is lower than a year ago. In the first quarter of the year the mills recovered 604,159 oz. of gold, as compared with 624,512 oz. in the corresponding period of 1951.

PLATINUM.—When the O.P.S. gave a period of grace up to July 27, 1952, for sellers to deliver platinum up to a price of $105 per oz., the trade expected the number of deals to be small. The reason for this expectation was that the price of platinum after the dead-line was to be only $93. The trade now reports that there has been a brisk demand for platinum near the new temporary price. Defence contracts based on cost-plus are blamed for this activity; it is possible, however, that there has been some buying in anticipation of the possible virtual disappearance of platinum when the ceiling price is lowered to $93.

SILVER.—The price of foreign silver continues to drop in New York. It is now only 83c. per oz. The Bank of England has confirmed with the reduction to 72½d.

The London Metal Market

(From Our Metal Exchange Correspondent)

The firm undertone to the tin market has continued during the week, and the backwardation has remained steady at between £9 and £10 per ton. Demand in this country is running below normal but there is still a keen demand from the Continent for tin afloat from the Straits. In spite of every effort to prevent it this tin is believed to be sold to America enabling the Continental dealer to benefit by the premium for dollars which is granted in several countries. In America, the R.F.C. continue to buy at a little below their selling price in spite of the fact that they are getting tin offered to them from every direction, and it appears that if the buying of tin had been in the hands of private firms it is almost certain that the Americans would be getting their tin at a cheaper price than that they are now paying. Buyers are waiting to see how the announcement by the Bolivian Government that all sales of tin ores are to be centralized will affect their price ideas.

The copper market is very unsettled pending clarification of the position of those firms in America which purchase copper at over the 27½c. per lb. mark. The expected drop in the zinc price has taken place and it is too early yet to assess whether this will have any further effect on the level of European prices. The lead market remains steady with very little business being done.

On Thursday the official close on the tin market was: Settlement price £977, Cash Buyers £976, Sellers £977; Three months' Buyers £967 15s., Sellers £968 5s. In the afternoon the market was easier. Turnover for the day was 105 tons. Approximate turnover for the week was 290 tons.

The Eastern price on Thursday morning was equivalent to £981 5s. per ton, c.i.f. Europe.

Iron and Steel

The impact of the U.S. steel strike upon the British economy could be serious. More than 750,000 tons of American steel are due to be shipped to this country before the end of the year and a stoppage of the pipe line could not fail to involve the steel using industries here in grave difficulties. There has been a prompt response to the nation wide strike call, but the Union seems to be anxious to prove its moderation. Mr. Philip Murray has asked the steel companies to resume negotiations and although there may be some hard bargaining an early settlement is not improbable.

The Whitsuntide holiday did not seriously affect production in the British steel plants and every effort is being made to attain maximum outputs during the remainder of Period II. But at best there are likely to be heavy cancellations of uncompleted orders at the end of June and thereafter the summer holiday period will extend the duration of the steel famine.

The recent shrinkage in the export trade has enabled the makers to pay more attention to home requirements, but re-armament orders are now increasing at a rapid pace, and there has been no perceptible improvement in the allocations to other consumers. On the contrary the operation of the controls is increasingly rigid and authorizations for even the smallest tonnages are only obtainable with difficulty if at all.

One favourable fact has just been disclosed. It transpires that deliveries of home scrap to the steel works are averaging 5,000 tons a week more than in the corresponding period of last year. Even this advance is qualified by the fact that supplies from the ship breakers are down by 2,500 tons a week. But even a small increase in scrap receipts is welcome and justifies all the effort which has been put into the home scrap drive.

Pig iron production is also rising steadily but supplies to the steel plants and also to the foundries, still fall substantially below requirements. Foundrymen's allocations are barely sufficient to keep their establishments in precarious operation, and they are further handicapped by the prevailing dearth of cast iron scrap.

JUNE 5 PRICES

COPPER

Electrolytic	£231 0 0 d/d

TIN

(See our London Metal Exchange report for Thursday's prices)

LEAD

Soft foreign, duty paid	£129 0 0 d/d
Soft empire	£129 0 0 d/d
English lead	£130 10 0 nom.

ZINC

G.O.B. spelter, foreign, duty paid ...	£150 0 0 d/d
G.O.B. spelter, domestic...	£150 0 0 d/d
Electrolytic and refined zinc	£154 0 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over	£270 per ton
Crude (70%)	£240 per ton
Ore (60% basis)	32s. 6d. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) ... ... £454 per ton

OTHER METALS

Aluminium, £154 per ton.
Bismuth, 21s. lb.
Cadmium, 18s. 3d. lb.
Chromium, 6s. 5d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.oz.
Iridium, £65 oz. nom.
Magnesium, 2s. 10½d. lb.
Osmiridium, £35 oz. nom.
Osmium, £70 oz. nom.
Palladium, £8 10s. oz.
Platinum (scrap), £33.
Platinum, £27/33 5s. nom.
Rhodium, £45 oz.
Ruthenium, £30 oz.
Quicksilver, £73 ex-warehouse.
Selenium, 25s. nom. per lb.
Silver (bar), 72½d. f.oz. spot and forward.
Tellurium, 18s./19s. lb.

ORES, ALLOYS, ETC.

Bismuth	65% 11s. 6d. lb. c.i.f. 60% 11s. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£13 per ton c.i.f.
,, ,, (concentrates)	£13 per ton c.i.f.
,, ,, Refractory	£12 12s. per ton c.i.f.
Baluchistan Metallurgical ...	£14 16s. per ton c.i.f.
Magnesite, ground calcined ...	£26 - £27 d/d
Magnesite, Raw	£10 - £11 d/d
Molybdenite (85% basis) ...	103s. 1½d. per unit c.i.f.
Wolfram (65%), U.K. ...	485s. nom. c.i.f.
Tungsten Metal Powder (for steel manufacture) ...	35s. nom. per lb. (home)
Ferro-tungsten	33s. nom. per lb. (home)
Carbide, 4-cwt. lots	£30 3s. 9d. d/d per ton
Ferro-manganese, home ...	£43 15s. 2d. per ton
Brass Wire	2s. 8½d. per lb. basis.
Brass Tubes, solid drawn ...	2s. 1½d. per lb. basis.

Cyprus Mineral Exports in April.—The April exports in tons were: Copper concentrates, 11,300; cement copper, 200; copper pyrites, 7,212; iron pyrites, 88,671; asbestos, 523; chromite, 10; gypsum, 12,688; umber, 178; ochre, 7. The total was valued at £908,598, and the labour force for the month was 6,057.

Moroccan Mineral Output, 1951.—**The following Moroccan mineral output figures for 1951 have been announced (in tonnes, figures for 1950 in brackets): Anthracite, 380,000 (367,000); iron ore, 500,000 (319,400); manganese ore, 360,000 (257,700); lead ore, 85,000 (65,874); zinc ore, 45,000 (22,766); cobalt ore, 6,000 (3,509); antimony ore, 1,500 (not available).**

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

The current week covered the period of the Whitsun holidays and consequently only four working days are included in the review. As might be expected, business was at a very low ebb and this was coupled with the general unhappy state of the stock markets. Tuesday was the final day of dealing for the three-week account; most members were glad to see the last of it. On Wednesday there was a very cautious rally of gilt-edged; some industrial shares followed suit. There was little real investment inquiry.

Turnover in Kaffirs remained small. No lead developed either from the Cape or Paris and the political difficulties remained unresolved. Share movements were patchy and, where they occurred, mainly technical. The May Rand returns aroused some interest but were in themselves inconclusive. Many mines showed slight reductions in working costs and some consequent improvement in profits, but others, notably in the Anglo American group, suffered from a further upward swing. Points of interest were the further increase in tons milled by West Driefontein and a good jump in profit. It is understood that this mine is still drawing much of its tonnage from development ore and surface dumps, and a higher profit is attributed to an increase in recovery. Both St. Helena and Welkom increased their working profits, but the former mine's working costs rose slightly while Welkom's were reduced by nearly 2s. a ton. New State Areas have given three months' notice of their intention to discontinue mining operations and at this stage it is uncertain how long work will continue on the property. The quantity of payable ore remaining is stated to be diminishing rapidly. Crown Mines again improved sharply on further consideration of the chairman's remarks last week.

In the O.F.S. section trading was quiet but a better tendency prevailed. The B.H.2 borehole figures announced by Geoffries were considered satisfactory.

The continued difficulties of the gold mining industry were again emphasized in a speech by the president of the Western Australian Chamber of Mines on May 30. He made it clear that the only methods by which gold mines can continue operations in the Commonwealth are either by a reduction in working profit or by an increase in the grade of ore treated. The latter would of course result in the abandonment of much low grade ore. He said that while it was obvious that many governments in the world required gold, none of them had taken any steps to adjust the price. An echo of this problem was heard in a debate in the Canadian Parliament where opposition members urged a resolute effort to get the United States to increase the gold price.

Coppers were again better on the possibility of further emigrations mentioned last week. Mr. Welensky's statement makes it clear that local opinion is in favour of controlling the mines locally rather than from a distance of some 6,000 miles. Chartered exceptionally were down on the chairman's statement that E.P.L. might well cost the company £1,000,000. The removal of certain controls in the United States caused the prospect of a higher price of copper to be seriously considered, but in view of the somewhat shaky outlook for commodities generally it is uncertain how long this would last once it came into effect. A recent survey of Mt. Lyell, Australia's largest copper producer, stated that the mine has a life of at least 22 years provided the price of the metal remains at a reasonable level. The mine is probably the lowest yielding commercial property in the world.

Consolidated Murchison dipped and later hardened following the reduced price of antimony which is now being quoted at $3.25-$3.50 per unit as against $3.50-$3.70.

Nickel and asbestos shares showed little change although many dollar issues were fractionally easier due to uncertain markets in America.

The lead/zinc market was considerably better following reports that the United States is to take 30,000 tons of the metal. Nevertheless, the price of zinc has again fallen and now stands at 17½c. per lb. Barriers were the main gainers. The Consolidated Zinc report was on the whole favourably received despite the uncertain outlook.

FINANCE	Price June 4	+ or − on week
African & European	2⅜	
Anglo American Corpn.	5⅜	
Anglo-French	19/-	
Anglo Transvaal Consol.	28/9	
Central Mining (£1 shrs.)	32/6	− 1/3
Consolidated Goldfields	42/6	
Consol. Mines Selection	23/9	− 7½d
East Rand Consols	3/1½	
General Mining	4⅜	
H.E. Prop.	30/7½	+ 7½d
Henderson's Transvaal	9/9	
Johnnies	2⅜	
Rand Mines	4⅜	
Rand Selection	35/-	− 1/3
Strathmore Consol.	28/9	− 1/4½
Union Corporation	37⅜	
Vereeniging Estates	3⅜	
Writs	30/-	+ 7½d
West Wits	42/6	
RAND GOLD		
Blyvoors	39/-	− 6d
Brakpan	17/3	− 3d
City Deep	28/9	− 7½d
Consol. Main Reef	31/3	
Crown	46/3	+ 2/6
Daggas	3⅜	
Doornfontein	22/4½	− 4½d
Durban Deep	3½	
E. Daggas	19/4½	
E. Geduld (4/- units)	40/-	− 7½d
E. Rand Props.	3⅜	
Geduld	6½	
Govt. Areas	11/-	− 3d
Grootvlei	31/-	− 1/6
Libanon	13/-	
Luipaards Vlei	18/-	
Marievale	21/-	
Modderfontein East	26/3	
New Kleinfontein	28/1½	− 7½d
New Pioneer	12/3	− 3d
Randfontein	18/-	+ 3d
Robinson Deep	10/9	
Rose Deep	26/3	− 7½d
Simmer & Jack	5/6	
S.A. Lands	40/7½	+ 7½d
Springs	7/4½	− 1½d
Stilfontein	23/-	− 9d
Sub Nigel	2⅜	
Van Dyk	12/6	+ 9d
Venterspos'	20/3	− 9d
Vlakfontein	17/-	
Vogelstruisbult	28/6	
West Driefontein	5⅜	
W. Rand Consolidated	48/4½	+ 7½d
Western Reefs	41/3	
O.F.S.		
Freddies	7/-	− 6d
Freddies N.	6/-	− 3d
Freddies S.	7/-	− 3d
F.S. Geduld	2⅜	
Geoffries	16/6	− 3d
Harmony	18/3	
Loraine	6/3	+ 3d
Lydenburg Estates	10/-	+ 3d
Merrispruit	3/9	
Middle Wits.	14/7½	− 1½d
Ofsits	40/-	+ 1/3
President Brand	18/6	+ 7½d
President Steyn	18/6	+ 9d
St. Helena	16/6	− 3d
U.F.S.C. & G.	6/6	− 3d
Virginia Ord.	10/3	− 3d
Welkom	28/9	+ 7½d
Western Holdings	3⅜	+ ⅛
WEST AFRICAN GOLD		
Amalgamated Banket	1/3	
Ariston	5/-	− 1½d
Ashanti	16/9	− 9d
Bibiani	6/1½	− 1½d
Bremang	2/4½	+ 1½d
G.C. Main Reef	2/10½	
G.C. Selection Trust	5/10⅛	− 1½d
Konongo	2/-	+ 1½d
Lyndhurst Deep	1/-	
Marlu	1/1½	− 1½d
Taquah & Abosso	3/10½	− 1½d
AUSTRALIAN GOLD		
Boulder Perseverance	2/3	
Gold Mines of Kalgoorlie	9/8-	+ 3d
Great Boulder Prop.	5/-	− 3d
Lake View and Star	15/3	+ 3d
Mount Morgan	18/-	+ 4½d
North Kalgurli	12/9	
Sons of Gwalia	8/6	− 6d
South Kalgurli	8/1½	− 1½d
Western Mining	7/4½	− 1½d
MISCELLANEOUS GOLD		
Cam and Motor	38/9	
Champion Reef	6/6	− 6d
Falcon Mines	7/10½	
Globe & Phoenix	23/-	− 3d
G.F. Rhodesian	6/1½	
London & Rhodesian	4/3	− 3d
Motapa	1/6	
Mysore	3/9	
Nundydroog	5/6	
Ooregum	2/9	
Oroville	10/9	
MISCELLANEOUS GOLD (contd.)		
St. John d'El Rey	23/9	
Zams	35/6	− 1/3
DIAMONDS & PLATINUM		
Anglo American Inv. Casts	4⅜ / 27/6xd	− 3d
Cons. Diam. of S.W.A.	3⅜	
De Beers Defd. Bearer	63/3	+ 6d
De Beers Pfd. Bearer	14⅜	+ ⅛
Pots Platinum	8/9	− 1½d
Watervaal	14/6	
COPPER		
Chartered	54/-	− 1/3
Esperanza	3/6	− 4½d
Indian Copper	3/9	+ 3d
Messina	3⅜	+ ⅛
Nchanga	7⅜	+ ⅛
Rhod. Anglo-American	54/9	+ 7½d
Rhod. Katanga	8/4½	− 6d
Rhodesian Selection	15/4½	+ 6d
Rhokana	20/-	+ ⅛
Rio Tinto	20½	
Roan Antelope	12/10½	− 4½d
Selection Trust	38/10½	+ 3d
Tanks	58/6	− 6d
Tharsis Sulphur Br.	41/3	+ 1/3
TIN (Eastern)		
Ayer Hitam	21/3	− 3d
Bangrin	8/-xd	+ 3d
Gopeng	10/1½	+ 1½d
Hongkong	6/3	− 3d
Ipoh	19/3	− 1/6
Kamunting	9/10½	+ 1½d
Kepong Dredging	6/9	
Kinta Tin Mines	13/6	
Malavan Dredging	21/6	+ 3d
Pahang	13/-	− 4½d
Pengkalen	8/3	
Petaling	13/4½	
Rambutan	11/10½	− 7½d
Siamese Tin	19/10xd	− 7½d
Southern Kinta	12/9	− 4½d
S. Malayan	22/-	− 6d
S. Tronoh	14/6	− 6d
Sungei Kinta	17/6	
Tekka Taiping	7/6	
Tronoh	20/7½	− 10½d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	8/6	− 1½d
Beralt Tin	19/9	− 3d
Bisichi	3/6	+ 1½d
British Tin Inv.	13/6	− 3d
Ex-Lands Nigeria	4/-	− 1½d
TIN (Nigerian and Miscellaneous) contd.		
Geevor Tin	10/10½	
Gold & Base Metal	3/-	
Jantar Nigeria	5/10½	+ 3d
Jos Tin Area	10/6	
Kaduna Prospectors	4/-	
Kaduna Syndicate	5/-	
London Tin	4/9xd	
United Tin	1/10½	
SILVER, LEAD, ZINC		
Broken Hill South	41/-	+ 1/3
Burma Corporation	1/7½	
Consol. Zinc	22/-	+ 6d
Lake George	13/3	+ 9d
Mount Isa	31/6	+ 2/-
New Broken Hill	22/3	
North Broken Hill	52/-	+ 1/-
Rhodesian Broken Hill	14/10½	
San Francisco Mines	30/3	+ 3d
Uruwira	4/6	− 1½d
MISCELLANEOUS BASE METALS & COALS		
Amal. Collieries of S.A.	41/3	− 3/1½
Associated Manganese	38/6	+ 6d
Cape Asbestos	15/9	− 3d
C.P. Manganese	42/6	
Consol. Murchison	44/4½	+ 7½d
Mashaba	8½d	
Natal Navigation	3⅜	
Rhod. Monteleo	10/9	− 3d
Turner & Newall	80/-	− 3d
Wankie	15/3	− 3d
Witbank Colliery	2⅛	− ⅛
CANADIAN MINES		
Dome	$35	
Hollinger	$25½	− $½
Hudson Bay Mining	$97	
International Nickel	$75½	− $½
Mining Corpn. of Canada	£5⅛	
Noranda	$137	− $½
Ouemont	£7⅛xd	
Yukon	4/6	− 1½d
OIL		
Anglo-Iranian	5⅜	− ⅛
Apex	40/-	− 1/3
Attock	20/7½	− 4½d
Burmah	59/4½xd	− 3/9
Canadian Eagle	29/6xd	− 2/3
Mexican Eagle	21/9	− 10½d
Shell	4⅞xd	− ⅛
Trinidad Leasehold	24/-xd	− 3/-
T.P.D.	23/9	− 1/3
Ultramar	29/9	− 9d

COMPANY NEWS AND VIEWS

The Diamond Industry

Although the diamond industry enjoyed astonishingly prosperous times in 1950, and particularly in 1951, when sales at some £65,000,000 were £14,000,000 were higher than in the previous year, and more than double those of 1949, the main supports which gave rise to the favourable market conditions have, during the current year, been considerably weakened.

The Korean war, which was largely responsible for the accelerated demand for diamonds, has, since the peace talks on the parallel, faded as the main driving force for increased consumption of diamonds. Consequently, the urgency of the American stockpiling programme has been somewhat blunted and now rests under the shadow of the impending presidential elections; while Government measures introduced to combat the inflationary trends which threatened to get out of hand in several countries have gone too far, with the result that the major proportion of industrialists and economists the world over now view the economic situation against a background of deflation rather than inflation.

Thus, it was not surprising that Sir Ernest Oppenheimer, chairman of De Beers, which accounts for about 95 per cent of the world diamond production, speaking at the company's annual meeting in Kimberley, on June 4 referred to the "quieter times" which may be expeced. This statement was, however, qualified by the fact that in the first five months of the current year sales of diamonds, both gem and industrial, effected through the Central Selling Organisation amounted to £32,856,000 which compares with approximately £65,000,000 in respect of the whole of 1951. Moreover, Sir Ernest gave it as his opinion that 1952 would be another prosperous year and although, as he said, boom conditions cannot continue indefinitely, the financial resources of the group would be employed as a stabilizing influence against countering any market recession which may eventuate in the future.

That the De Beers organization's resources would be employed as a stabilizing influence was expected. Nevertheless, it is most valuable to have this statement of policy put down so clearly for all those who remember the lean period of the 'thirties. Sir Ernest referred to this thin period and said that during that time the Corporation was compelled to accumulate very large stocks of all types of diamonds which resulted in the Corporation having to bear a heavy burden. On the other hand, the favourable market conditions prevailing since the end of the war enabled a large proportion of these stocks, acquired when prices were low, to be sold at the high prices now ruling. But even so, at the end of 1951 the Corporation still had in hand a substantial accumulation of diamonds.

The unloading of a considerable proportion of these stocks enabled the Corporation to build up a very strong cash position, and currently, resources exceed considerably the requirements necessary to meet commitments with producers outside the Union, and for protecting the diamond trade under all conditions. In this connection, Sir Ernest declared that it was the intention of the Corporation to employ these additional funds in helping to develop the mining industry in South Africa—a decision already taken by De Beers Industrial Corporation—and one which conforms to the policy of the founders of De Beers. Actually, this statement was merely formalizing the recent policy pursued by the Corporation as the last report and accounts showed that appreciable amount of revenue accrued from sources not connected in any way with diamonds.

The vicissitudes to which the diamond trade is exposed is well known and the awareness of this fact by Mr. Havenga, the South African Minister of Finance, led him to say when presenting his budget in 1937 that he proposed that the revenue from Diamond Export Duty be credited to loan account and not revenue, as under the latter heading, owing to its fluctuations, was a source of embarrassment rather than of strength. Despite this acknowledgement of the varying trading conditions to which the diamond industry is subjected, Sir Ernest pointed out that the diamond mining companies have been selected for discriminatory taxation simply because for the time being the industry was prosperous. Viewing such a step over the last twenty years, he showed that such discriminatory taxation was against the best interests of the country as it destroyed initiative and discouraged the financing of new enterprises.

To illustrate his argument Sir Ernest used the examples of opening up and developing the Jagersfontein mine and the Premier mine, neither one of which at the present rate of taxation would yield a reasonable return on capital invested. Furthermore, the Corporation had hoped to open the Koffiefontein mine in the Orange Free State in place of the Jagersfontein when it ceased operations, but with the present high rate of taxation, unless the results of sampling indicate very much higher values than could reasonably be expected, the Corporation would not be justified in incurring the heavy capital expenditure necessary to bring the mine into production. The pressing burden of taxation has also led the Corporation to abandon further prospecting work at Kamfersdam mine.

If this thesis should appear to present only one side of the picture the chairman drew attention to the fact that for the 10 years ended 1941, which covered the severe crisis in the early 1930's, taxation amounted to £1,482,504, but that in the next decade which ended with the year 1951 the diamond companies paid the sizeable total of £36,621,755 to the Union treasury. In addition to these amounts, over the 10 years ended 1951 United Kingdom received £11,428,207 and the South West Administration £4,493,851, equivalent to a total of £52,543,813 exclusive of a 10 per cent Export Duty.

Vast Interests of Anglo American Corporation

The comprehensive nature of the Anglo American Corporation's business, its vast resources and widespread participations, make its annual report for 1951 of some 20 pages a document of arresting interest. Undoubtedly, the most dynamic and progressive of the South African groups, it is an empire on its own and has become outstandingly prominent since the opening up of the Orange Free State goldfield. In this it has taken a lead and added the control of seven mining ventures to the administration, which it has had for many years, of six Rand gold producers. Additionally, through its preponderating holding in West Rand Investment Trust it participates in all the Far Western Rand gold mining undertakings. Its compass of mining interests include large holdings in finance and investment companies, prospecting and developing undertakings, together with base metal producers, Rhodesian copper and Transvaal coal. Large and varied participations are held in industrial ventures covering metals and alloys, electricity, tyre cord and belting duck, zinc products, cables, engineering, etc.

The Corporation's interest in the diamond industry is consolidated through its control of Anglo American Investment Trust. This effects interests in De Beers Consolidated, Premier Diamond, Consolidated African Selection Trust, Boart Products, Consolidated Diamond Mines of South-West Africa, De Beers Industrial Corporation and the Diamond Producers' Association.

Shareholdings standing in the books at £17,765,674 had a market value at the end of 1951 of £35,525,021. Current assets of £23,377,245 exceeded current liabilities of £20,258,475 by £3,118,770. In April this year the authorized capital was increased to £7,000,000, by a one-for-ten issue to shareholders at £6 10s. per share.

In our issue of April 4 we gave the Corporation's preliminary figures, and the following are taken from the accounts:

	1951	1950
Issued capital	£5,499,128	£5,499,128
Reserves, etc.	£13,868,694	£13,019,095
Registered bonds	£4,081,633	£4,081,633
Creditors and tax	£2,087,401	£13,952,957
Loans	£16,721,340	£15,860,008
Investments	£17,765,674	£15,784,997
Notes and debentures	£2,565,010	£2,435,766
Gilt-edged	£3,101,251	£4,545,390
Loans	£8,812,593	£6,391,181
Debtors	£1,910,198	£2,410,876
Cash	£23,377,245	£35,798,346
Net profits	£3,594,345	£2,859,780
Taxation	£700,000	£520,000
To reserve	£850,000	£3,050,000
Dividends, total	£2,014,614	£1,956,520
Ordinary	6s.	6s.

Consolidated Zinc's All Round Improvement

The report and accounts of the Consolidated Zinc Corporation for the year 1951 reflect not only the high level of prices obtained for lead and zinc throughout the year but also the high degree of efficiency achieved by the company in its operations.

Profit, before taxaion, increased by no less than £2,461,074 to £7,031,874 which figure, moreover, was arrived at after charging £701,318 for depreciation against a charge of £585,596 in the preceding year. Taxation liabilities were heavier, £4,483,113 against £3,011,419, and after deducting the interests of minority shareholders, the net profit for the year available for distribution was £2,404,708 an increase of £975,028 over the preceding year's net profit figure of £1,429,680.

These improved results fully justified an increase in the final distribution and a final dividend of 2s. per share, together with a bonus of 1s. per share was recommended making a total distribution for the year of 4s. per share compared with 2s. 6d. per share for 1950. Expenditure on patent processes and development amounting to £350,420 was written off out of profits, the sum of £900,000 was allocated to general reserve, of which £200 000 was set aside by the parent company and 700,000 by its subsidiaries leaving the carry forward at £683,646, an increase of £360,993, over the corresponding figure in the preceding year.

Similar profit expansion was reflected in the balance sheet and consolidated current assets were recorded at £19,076,182, an improvement of £5,851,179 on the previous year's total, which more than offset the rise in current liabilities from £6 929,240 to £9,756,840.

Mr. J. R. Govett, chairman, in his statement accompanying the report and accounts said that the high prices of the past two years have encouraged the search for fresh sources of production, and though time must elapse before new supplies reach the market it is hoped that the normal growth in the world's requirements on a peace time basis will take care of this increase and reward the venturesome for their enterprise. In Australia, the chairman continued, the prices of the company's products remained under control with both lead and zinc at £A65. Repeated efforts have been made by the mining companies in the Broken Hill field and the Electrolytic Zinc Co. of Australasia to bring other producers, who are exporting their products, into a scheme so that the burden of meeting the domestic market may be spread over a greater proportion of the mining industry. Likewise, the companies have continuously stressed with the authorities concerned the anomolous position arising from the sale of their metals to local industries at less than one-third of world prices. The whole matter remains under review and the chairman hoped that before he addressed shareholders again at least some part of these inequities would be removed.

Since the close of the corporation's fiscal year a small subsidiary company has been established in Canada—The Consolidated Zinc Corporation of Canada—in order to maintain contact with mineral developments in that country of likely interest. This company is also representing Imperial Smelting Corporation in connection with the marketing of certain of its products in Canada.

New Broken Hill Pays More

The full report and accounts of New Broken Hill Consolidated for the year 1951 showed that profit before tax amounted to £1,338,884 an increase of £407,943 over the previous year, and due partly to the higher prices received for the company's products and partly to greater operating efficiency. Costs, particularly of wages and lead bonus, were much higher and aggregated £1,795,871 compared with £1,443,332 and after providing £178,000 (£103,000) for depreciation and £719,860 (£480,400) for taxation, the net profit for the year was £619,024 against £450,541.

Total distribution for the year was stepped up from 1s. 6d to 2s. 6d. per share absorbing £294,156, the sum of £300 000 (same) was allocated to general reserve, leaving the carry forward stronger at £226,663 compared with £201,795 brought in.

Current assets were shown in the balance sheet at £2 380,410 (£2,494,426) while current liabilities were recorded at £1,225,644 compared with £752,198 previously. There was also an approximate liability in respect of outstanding capital committments not provided for in the accounts of £565,000.

Mr. John R. Govett, chairman, in his statement circulated with the report and accounts said that unless further delays in delivery of materials or of equipment from overseas slowed down the present rate of progress, this year should see the company's mine operating as an independent producer to a far greater degree than hitherto, although it will continue to have the great benefit of the surface openings and underground connections provided by the adjacent workings of the Zinc Corporation's mine.

Company Shorts

Lake View Investment Trust Pay 20 Per Cent.—Net profit of Lake View Investment Trust for the year ended March 31, 1952, was £117,844 compared with £103,540. This net figure was struck after providing £149,866 (£100,952) for taxation which included an estimated provision for E.P.L. of £8,000. The total dividend distribution on the ordinary shares was raised from 15 to 20 per cent and the carry forward at the fiscal year end was £104,972 against £101,112.

Gopeng Consolidated.—Gopeng Consolidated, the principal producing company in the Redruth-Malayan Tin group, owns alluvial tin mines at Gopeng, Kinta District, Perak, Malaya, which are worked by hydraulicing. Thus, the heading "Dredge Treated" (per cu. yd.) contained in the tabulated results appearing in last week's issue giving details of the company's operations for the two years ended September 30, 1950 and 1951, should have been styled "Ground Treated" (per cu. yd.) as the company does not own a dredge.

Ampat Tin Increases Output and Raises Dividend.—Ampat Tin Dredging for the year 1951 raised production of tin concentrates from 853 tons to 1,100 tons and this, together with an increase in the price of tin, was responsible for the expansion in revenue from £488,373 to £853,090. Costs were heavier, £385,525 against £278,057 leaving an available balance before tax of £467,565, compared with £210,316. Taxation was appreciably heavier at £258,500 (£97,000). The sum of £36,000 (£22,000) was written off expenditure on restoration and dredge removal, £130,000 (£70,000) was allocated to reserves and after distributing 30 per cent (15 per cent) which absorbed £39,375, the carry forward at the fiscal year end was £59,186 compared with £55,496 brought in.

New State Areas Gives Three Months' Notice.—New State Areas has given three months' notice of its intention to discontinue mining operations, with effect from June 1.

The reason given for the closure notice was that the quantity of payable ore available for mining is rapidly being depleted, the milling rate has been progressively declining, and the company states that there is little likelihood that additional sources of payable ore will be discovered.

However, the treatment of old residues from which a certain revenue is derived is continuing on an increasing scale, and will continue, it is stated, for as long as this operation proves profitable, both during present mining operations and during clean-up operations, when mining ceases.

Pari Tin Receives Offer.—Pari Tin has received an offer of £5,833 for the sale of its 288 acre property in the Chemor district, Perak, Malaya. The Board consider the offer a fair one and recommend its acceptance by shareholders, consent to the proposed sale has been given by the Treasury. The proposed sale does not include the company's war damage claim for $60,194.

The directors are in favour of disposing of the mine because recent boring results offer little hope of further payable ground being discovered and the property is situated in an area badly affected by Communist terrorism. Shareholders will be asked to approve the sale of the company's Malayan assets at an Extraordinary Meeting to be held in London on June 12.

Roura & Forgas Refuse Mining Lease Terms from Greek Government.—Roura & Forgas have been investigating the possibilities of working the Larymna low-grade nickel mine in Greece and after expending considerable time and money on working out the most practical methods of dealing with this mining proposition, proposed to produce a high-grade nickel product in Greece which would have benefited that country's economy. The question of lease terms has been a matter of negotiation between the company and the Greek Government from early 1951, and despite the benefits which would accrue to Greece from the production of a high-grade nickel product, the terms of the proposed lease offered to the Company by the Greek Government, dated March 21, 1952, did not take into account the heavy risk involved in developing such a highly speculative enterprise and therefore Roura & Forgas have refused to accept the proposed lease terms.

CENTRAL MINING & INVESTMENT CORPORATION

The Forty-Seventh Annual General Meeting of The Central Mining & Investment Corporation Ltd. was held on May 29 in London.

Sir Clive Baillieu, K.B.E., C.M.G., the Chairman, in the course of his speech, said: As the provision for taxation has evoked some comment, I should perhaps make some further reference to it. The provision for 1951 in fact contains no exceptional element. I have previously pointed out that depreciation in the value of investments charged against declared profits does not become admissible as a charge against profits liable to tax until it becomes a realized loss. This is the main cause of disparity. In comparing 1950 with 1951 it should be mentioned that the provision for taxation in the earlier year was favourably affected by realizations of the kind just mentioned. The provision for taxation expressed as a percentage of declared profits for the last four completed financial years has fluctuated thus: 57 per cent in 1948, then 45 per cent, 42 per cent and finally 58 per cent in 1951. There are at present no grounds for thinking that fluctuations of this magnitude are not liable to happen in the future.

Perhaps the outstanding influence in the Union's economy during 1951, as in that of most countries, was the continuing and even increasing inflation. There is little doubt that the rising cost of imports has been one of the major contributory causes, while another has been the considerable increase in the total volume of public and private expenditure both on capital and current account. Although the final result has been a welcome increase in net real investment, the tendency for investment to outrun savings and for capital to flow into the country more easily than the real resources which it represents (especially capital equipment on long delivery) has provided an additional inflationary influence.

The South African gold and exchange reserves have been relatively stable in recent months, but they are small when considered in relation to the carry-over of unexecuted orders for equipment and materials and to the sudden and violent swings which have characterized the trade and payments balances of most countries since the war.

Apart from the purely monetary and inflationary influences, there are, however, factors which will influence the rate of further development of the country's resources. I have in mind, on the material side, particularly the shortages of power, transport and labour, to which I referred last year and which have since become more acute. The poor response to the official encouragement of wage incentive schemes with a view to increasing productivity gives grounds for believing that the labour problem will not be easily solved. With regard to non-European labour, although the steady reduction in the total supply between 1941 and 1948 appears to have been halted during the past three years and even slightly reversed, the labour requirements of the goldmining industry are increasing.

Good progress has been made in shaft-sinking operations on the Harmony mine since I addressed you last year. An average rate of about 200 ft. a month has been attained. The ventilation shaft, situated near the pioneer H1 borehole, is now expected to cut the Basal Reef horizon in three months' time. A further few months must then elapse before the shaft and auxiliary workings can be ready to serve a programme of active development.

The speed with which the mine can be brought to production will be influenced by widely varying underground conditions which are characteristic of the new mining areas.

The rapid and coincident development of major new gold mines to the south-west of the older Rand—now 17 in number—presents a picture of intense constructive activity, without parallel in mining history. The technical achievements recorded bear testimony to the skill and capacity of those in direct control of operations in South Africa. No less impressive is the evidence of financial courage displayed in the support of so many ventures before any one of them has proved its worth in dividend capacity.

At the end of this year, four of the new mines will be producing —two of which will have reached the stage of normal stoping practice—and 11 more will be gradually revealing their economic prospects by development on reef.

It has been rightly pointed out that no unprofitable mine, no major gap, has been disclosed upon the old Witwatersrand—except for small areas upon the fringe—throughout its stretch of 80 miles, from the Sub Nigel to Randfontein. While we may expect to see variations of fortune and delays and irregularities in the progress of expansion of individual mines, there is good ground for the hope that in spite of all the physical distinctions, the greater part of the newer regions will follow a similar pattern of ultimate recovery. Each new mine, at the stage of early production, will call for some 500 Europeans and 4,000 native labourers. Highly efficient organisations under the Transvaal Chamber of Mines are making ever-increasing efforts to expand the sources from which our native labour can be drawn. Unskilled labour is far short of needs upon the old producing mines, with particular acuteness at certain seasons. The direct attraction of skilled men to the new fields and the indirect diversion of unskilled labourers are factors presenting a problem of great complexity.

Our group is particularly concerned in the maintenance of maximum tonnage upon the deep and marginal mines of the Central Rand. In these mines, with their complex systems of sub-vertical or sub-incline shafts, long haulages and scattered workings, the burden of standing charges in European and native labour, employed upon directly non-productive work, is of particular severity.

It is appropriate to refer in this context to the position at the Crown Mines, employing 7-8 per cent of the Rand's labour force, where recent difficulties have been intensified by shortage of skilled and unskilled labour and where results and prospects would be gravely influenced by any further shrinkage in supply.

At the Crown Mines, these adversities have combined with a fall in yield, reflective of poorer development and ore reserve values, to reduce the margin of profit to lower figures than were declared before devaluation in 1949. All the factors responsible for this deterioration have been investigated with the utmost thoroughness by the consulting engineers and management. This great producer still has great potential strength, in its total ore reserves of many million tons and large areas yet to be developed. The resources of comparatively high-grade ore locked up in shaft pillars, which will take several years to prepare and mine out in proper sequence, may have to be drawn upon for the maintenance of satisfactory profits much earlier than previously was planned.

Reference has been made in the last two annual reports of Crown Mines Ltd. to the occurrence of a great dyke, running parallel to the southern boundary, at the bottom of the mine. The position of the reef beyond it has been established at several points but it has been becoming steadily more evident that the heavy expenditure necessary to create new stoping areas beyond the dyke would not be warranted.

The City Deep is another of the group's large mines suffering with particular severity from rising costs imposed upon other adverse factors.

At the East Rand Proprietary, the new sub-inclines and winzes, below the bottom haulage level, are making satisfactory progress in the opening up of new ore reserves of good value. The yield and working profits of this company, at the extreme east of the Central Rand, as of the Durban Roodepoort Deep, at the west, were well maintained during the past year.

The Blyvooruitzicht mine has long stood in isolation as a gold producer some 14 miles to the west of the nearest treatment plants at Libanon and Venterspost. To-day, the situation has changed significantly and the company now shares with West Driefontein, adjoining it on the east, the distinction of mining the richest section of the Witwatersrand, for which no rival is as yet in sight. West Driefontein started milling ore from development faces in February last and has reached the profit-stage with even greater rapidity than that recorded by Blyvooruitzicht, which started production exactly 10 years before.

Of no less importance, though with a different bearing upon the prospects of this prosperous region, has been the recent revival of full activity on the Doornfontein mine, adjacent to Blyvooruitzicht on the west, where it is hoped to start small-scale production in 1953. The results of work upon this neighbouring property will have an important bearing upon the prospects of the large undeveloped area on the western side of Blyvooruitzicht.

The chief exploration work performed under group control during the year has been the continuation of prospecting operations by diamond-drilling in the Free State goldfield—with results of geological rather than economic importance—and the resumption of development upon the platinum deposit on the farm Boschkoppie No. 685 near Rustenburg, upon which work has long been dormant.

It may be recalled that about 25 years ago the group held a leading position in the prospecting of the then newly-found platinum occurrences of the Lydenburg and Rustenburg districts. Near Lydenburg, one deposit—of exceptional type, in no way characteristic of the extensive and persistent ore bodies which have been worked successfully in recent years—was brought to production, and, in other areas, considerable development work was done, which was discontinued owing to the comparatively low price of platinum and the general weakness of the metal market.

The deterioration in the political situation in South Africa has become a matter of increasing disquiet to all well wishers of the Union. We realize that the issues now confronting the South African people are primarily matters for them to resolve within the framework of their own constitutional and political system, and that it is unlikely that a solution agreeable to the main interests there will be helped by comment, advice and suggestions, however well meant, from the outside world. South Africa must depend for its continued and uninterrupted development on a smooth and regular flow of capital from the outside world, and this again will rest upon the confidence which the outside world has in the sanity and good sense of its people, and the underlying stability of the country.

The Report and Accounts were adopted.

ANGLO-IRANIAN OIL COMPANY

ACCOUNTS REFLECT ABNORMAL TRADING CONDITIONS IN IRAN

INCREASED SUPPLIES FROM OTHER SOURCES OFFSET IRANIAN CESSATION

SIR WILLIAM FRASER'S STATEMENT

The Forty-Third Annual General Meeting of the Anglo-Iranian Oil Co. Ltd. will be held on June 26 in London.

The following is an extract from the statement to stockholders by the Chairman, **Sir William Fraser, C.B.E.,** covering the year 1951:

The gross trading profit of £71,377,882, compared with £115,495,994 last year, results from all of the widespread activities in which the Company is interested. After providing for taxation on profits from all sources, the amount available for reserves and dividends is £24,233,050, compared with £33,102,572 for 1950. Your Directors have allocated £1,000,000 to Preference Stock Reserve, bringing the total to £9,000,000, and have placed £16,000,000 to General Reserve, which now stands at £81,000,000. They have recommended a final dividend of 25 per cent less income tax on the Ordinary Stock, making 30 per cent for the year.

INTEREST IN IRAN

In my statement to you last November I described the course of events which had so gravely injured the company's interests in Iran.

As then explained, the British Government had instituted proceedings in May, 1951, before the International Court of Justice at The Hague, on the ground that the company, a British national, had been treated in a manner not in accordance with the principles of international law, and that there existed a dispute between the two Governments.

Towards the end of last year the International Bank for Reconstruction and Development approached the British and Iranian Governments and offered its good offices to assist in the settlement of the differences between them, both being members of the International Bank. In so doing the bank stated that it would avoid passing judgment on the merits of the controversy, and would be prepared to act only upon the invitation of both Iran and the United Kingdom. The two Governments accepted the bank's offer.

Subject to the agreement of the parties the Bank intended, in its rôle as a neutral and impartial institution, to set up for a limited period of time a temporary management for the operation of the oil properties which would be responsible to the Bank: there was however no intention of the Bank engaging in oil operations permanently or as a business venture. The aim would be to achieve agreement on a temporary arrangement (covering a period of two years or less) whereby efficient large-scale operations in South Iran might be restored, in the interests of Iran, the United Kingdom and the Bank's members as a whole, and in the hope of creating an atmosphere suitable for the negotiation of a final settlement.

Letters outlining the position, together with the Bank's understanding of the main points on which an agreement could be based, were addressed by the Bank to both Governments at the end of December, and it was made very clear that no steps would be taken which would compromise the legal rights of the parties. It was envisaged in the Bank's proposals that the Company would enter into an agreement with the Bank to purchase oil on terms satisfactory to the parties, and that part of the proceeds of sale would be held by the Bank, pending final settlement.

There followed a series of discussions, after which a joint communiqué was issued by the Iranian Government and the International Bank indicating that no agreement had been reached on several important points. The Bank later published a detailed review of the negotiations in which it was explained that the main unresolved issues were concerned with the status of the Bank during the period of its operations in Iran, with the employment by the Bank of British Technicians and, thirdly, with the price at which oil might be sold by the Bank.

In the absence of agreement on these points it will be realized that a basis for the operation of the industry did not exist. In addition the question of prices at which oil would be purchased by the Company was explored with the Iranian Government and no conclusion was reached. The Bank finally stated that it had informed both the Iranian and British Governments that it stood ready, as in the past, to assist in working out any practicable suggestion offering a reasonable prospect of success.

PRODUCTION AND REFINING

Operations in the oilfields of Iran continued normally until June, 1951, except for a slight interruption due to a strike in April. In June production was cut back and in July was shut in as export had ceased and storage was full.

Compared with 1950 there was a decrease during 1951 of 15,573,000 tons in the oil production at our disposal from Iran, and an increase of 6,820,000 tons from our share of production in Kuwait, Iraq and Qatar. During 1952 our supplies from these three sources are expected to be about 26,000,000 tons, compared with 16,632,000 tons in 1951. Our crude oil production in the United Kingdom was 45,100 tons. In Scotland production of shale was 1,411,000 tons, yielding 104,500 tons of oil.

Our exploration activities continue in various parts of the world.

The statement then referred to the refining operations in Iran until activities ceased, in Iraq, Kuwait, France, Italy, Belgium, Germany and Australia (where a new refinery at Kwinana, near Freemantle, is to be built which will have a capacity of 3,000,000 tons a year).

In Great Britain, throughputs at Llandarcy and Grangemouth were greatly increased. Llandarcy refined 3,671,000 tons against 2,634,000 tons in 1950, and towards the end of the year a rate of over 4,000,000 tons per annum was attained. At Grangemouth the completion of important parts of the programme of modernization enabled 1,512,000 tons to be processed compared with 657,000 tons in 1950; new plant came into service in April, raising the capacity of the refinery to 2,250,000 tons a year. At Pumpherston refinery which operates on Scottish shale-oil and crude petroleum produced in the United Kingdom, throughput was 149,000 tons. Detergents produced at this refinery are finding an increasing market and new products are being developed.

Good progress has been made with construction of our Kent refinery, which it is hoped will start operations at half its eventual 4,000,000 tons per annum capacity during this coming summer.

PIPELINE AND SEA TRANSPORT

The commissioning in May, 1951, of the Finnart to Grangemouth pipeline across Scotland enabled the greater part of our crude oil supplies for Grangemouth refinery to be imported by this route.

In my last report I informed you that the British Tanker Co's fleet numbered 153 ships of 1,854,000 deadweight tons. Since then two old ships have been sold and four new 28,000 ton ships have been delivered, making the present total 155 ships of 1,950,000 deadweight tons. There remain under construction or on order 21 ships totalling 426,000 deadweight tons. We have on charter about 2,000,000 deadweight tons of tanker shipping, more than half of which is fixed for several years ahead.

Although tankers are being built at a rate of about 2,000,000 deadweight tons annually, more than half of them in British shipyards, the world tonnage has remained barely adequate to demand and consequently freight rates have remained high. Further substantial orders have, however, been placed, both in the United Kingdom and elsewhere, including many ships for comparatively early delivery.

DISTRIBUTION AND SALES

World demand for petroleum products increased by approximately 12 per cent in 1951 compared with the preceding year, this high rate of expansion having thus occurred for two years in succession. In meeting so striking an increase in world consumption despite the cessation of supplies from Iran at the end of June, the world oil industry has once again demonstrated the strength of its resources and the flexibility of its operations.

World market export prices f.o.b. for products and crude oil remained substantially unchanged during the year, but the increase in freight rates and the impact on distribution expenses of the general rise in costs were reflected in increases in selling prices in the consuming markets. Moreover, petroleum products continue to be relied upon by Governments to make heavier tax contributions to their revenues; such levies now constitute in many instances a major part of the price which the consumer pays.

After supplies from Iran had ceased in July we supplemented the fullest use of our own crude oil and refineries by hiring refining capacity and by purchases from other sources. The result was that our sales for the year declined only by some 2,000,000 tons from the 1950 total of 38,500,000 tons, although events in Iran deprived us of some 15,000,000 tons of supplies from that source. Our largely increased supplies of crude oil from Kuwait, Iraq and Qatar have more than offset the discontinuance of our crude oil exports from Iran. The increased supply of refined products from our own refineries and from processing arrangements made with other refiners cannot, however, meet our marketing requirements. We shall continue to supplement our own supplies of products by purchases where we can do so on satisfactory terms, thus using every endeavour to conserve both our goodwill and a sound trading position until such time as we have available supplies from our own resources sufficient to enable the Company once again to go forward and expand its business as in the past. Profit margins on such purchases have suffered from the high rates of freight which have prevailed, and the extent to which this purchasing policy can be followed is governed by many factors and is constantly under review.

THE STRAITS TRADING CO. LTD.

At the Annual Meeting of The Straits Trading Co. Ltd., held in Singapore on May 21, 1952, the Chairman, **The Hon. Mr. E. M. F. Fergusson,** who presided, said:

The Report and Accounts for the year ended December 31, 1951, having been in your hands for the prescribed time, I shall, with your permission, take them as read.

The quantity of tin ore available for smelting in Malaya showed a reduction of about 3 per cent over the year 1950, due to decreased receipts from sources of supply outside of Malaya. The main cause of this decrease was the advantage which could be gained from realization in currencies other than sterling. So long as this condition exists we must expect the processing industries of Malaya to suffer loss of business. The objective of a large portion of international trade nowadays is to acquire U.S. currency, and the devices which are used for this purpose are many, and to the disadvantage of normal trading. The remedy lies in freely convertible sterling, but how this will be achieved is difficult to see at present, though naturally we all hope that the right solution will soon be found.

Malayan output has remained remarkably steady, though there has been a significant decline in the output from Chinese controlled mines since 1950, a tendency which is continuing into 1952. Mines in the eastern states of Trengganu and Kelantan have been ordered, for security reasons, to cease production, and the output from Johore, with the exception of one dredge still operating has, for similar reasons, dropped to a very small figure. Until security returns to the outlying areas it would seem that the decline in small scale mining must continue.

In regard to the general picture of the industry there is nothing that I can usefully add to the review I made when I addressed you a year ago. There has been no change in the long term production prospects.

At that time, I also drew attention to the ill-feeling which had been created by the Press reports of utterances of various persons in the United States. To help clear the air and establish a more friendly atmosphere, the Mining Industry arranged, through the Federation Government, that a United States Mission be invited to visit Malaya and see conditions as they really were. This Mission arrived in November, 1951, and no opportunity or information was denied to its members in their quest for mining and marketing facts. Since the visit there has been a cessation of the ill-natured comments which made newspaper headlines last year, and the unilateral negotiations which the United States Government has recently conducted to obtain much needed replenishment of tin supplies have apparently been free from acrimony, though it is perhaps too much to say that everyone is happy and contented.

Rigid control continues to be exercised in the U.S. in regard to who shall buy tin and the purpose for which it may be used. The inflationary spiral which caused so much disturbance to the price last year seems to have ended, and with the cessation of panic buying much of the reason for the American controls has been removed. While appreciating the peculiar difficulties of the U.S.A. in regard to a commodity which she does not produce, I hope the time will soon be reached when freedom for the individual to trade without restriction will again prevail.

Turning now to the Balance Sheet, the Profit for the Year amounted to $1,939,766, an increase of nearly $500,000 over the preceding year. The profit includes a dividend paid by the small East African subsidiary in which there are other shareholders. The increased dividends from our sundry investments have helped to achieve the improved results, and the proposed transfer of $1,000,000 to Investment Reserve is, I am sure you will agree, a prudent recommendation in the circumstances. While ore was profitably treated at Pulau Brani, costs have continued to rise steeply and quickly, and so far there are no signs of a reversal of this trend.

Sundry Creditors and Credit Balances show an increase, but this is of no particular significance as this item can vary widely from time to time, depending on payments which have been made for tin awaiting delivery or because of amounts due for tin ore which were outstanding at the end of the year.

The Bank Overdraft has shown a welcome reduction, due partly to the lower price at which we were financing our tin and tin ore stocks, but also helped by the best utilization of funds from time to time in the hands of subsidiaries. The position has also improved since the close of the year by an initial payment of a 70 per cent dividend amounting to $3,000,000 against our claim for loss of insured tin and tin bearing stocks taken by the Japanese. It is perhaps worth recording that we have been denied the use of this money for ten years and that the cost to us in interest has been considerable over that period.

On the Assets side, Works, Land, Buildings and Furniture continue to be nominally valued, though showing an increase of nearly $300,000. We expect this figure to increase steadily in the future as material which has been on order for some years is now in process of being delivered, thus enabling us to proceed with much-needed extensive reconstruction at Butterworth. We have not yet been assessed for the very heavy material damage we sustained to our property, but we hope that the time is not far distant when the War Damage Commission will resume examination of our claim which we thought had been completed over two years ago.

Pulau Brani leases have been written down at their usual rate against expiry.

Investments in subsidiary companies remain unchanged, but amounts due from them show a reduction in the aggregate reflecting the use of liquid resources and also the effect of a contingency reserve not now required. Sundry Investments remain practically unchanged, the aggregate market value being in excess of the book value. The Singapore Plywood Co. Ltd., in which we are associated with two others, is now producing plywood of high quality. The many purposes to which this material can be put are not yet appreciated by potential users in Malaya, and it takes time to establish a market for a new product both here and overseas. We are hopeful that sales will speedily increase from now on.

Tin and Tin Ore in Stock and in Transit and Fuel and Stores Stocks continue to be conservatively and safely valued, the value of the latter reflecting the substantial increases in prices which took place during the year.

Sundry Debtors is a sound item and Cash in Hand calls for no comment.

In regard to our subsidiary companies, the British Tin Smelting Co. Ltd. earned satisfactory profits, though the scarcity of materials suitable for treatment continued throughout the year. The position has recently improved, and we are hopeful that the increased capacity of the plant will soon be more fully utilized.

Pelam Estate had a very good year despite even worse weather conditions than were experienced in 1950. The effects of terrorism in the part of Kedah in which the estate is situated have proved detrimental to the maintenance of the labour force at full strength as well as placing a considerable strain on the staff, for whose loyal service under these trying conditions we express our deep appreciation. The high prices obtained for rubber during the year under review, even with yields affected by unfavourable conditions, resulted in satisfactory profits being earned. The estate of over 4,000 acres of modern rubber is a low-cost producer and so long as rubber is required by the world we feel we can look forward with confidence to the future of this investment.

In regard to our mining properties, as was foreshadowed a year ago the dredge transferred from Thailand to Malaya is now operating and is the only tin dredge in the State of Pahang. Much credit is due to the mine staff for having built up an organization in an area where workers with dredging experience are not easy to recruit and where there is always an element of danger. For the first few months after starting up, we experienced our full share of the "teething" troubles which are common to newly erected plant, but these now seem to have been overcome and production of tin ore is in accordance with the boring results.

In South Siam considerable progress was made during the year in developing and equipping the Laboo Mine. Numerous permanent buildings were erected and electric power is now available from our own station which is being extended to meet the future needs of the mine. The pilot mill commenced operations towards the end of the year and results from this experimental plant are encouraging, indications being that the Laboo ore is amenable to treatment by a combined flotation/gravity-concentration process which, on a commercial scale, should yield a satisfactory recovery of high-grade tin concentrate. The problem of design and financing the purchase and installation of a large-scale milling plant is now receiving our attention.

The desirability of bringing other mining properties to full production is constantly before us but, as I have said before, we are content to proceed slowly, having due regard to the variety of circumstances prevailing in Malaya at the present time.

The employees of our mines have also had to contend with the difficulties caused by the present terrorist situation, and we are indebted to them for their attention to duty in these trying times.

For the benefit of Stockholders resident in the United Kingdom, I have once again to mention the question of relief from U.K. Income Tax, without yet being in a position to advise you of the outcome of the negotiations. The many complexities associated with our Singapore Income Tax computations have now been overcome and negotiations have moved to London, where we can only hope that attainment of a formula will not be unduly delayed.

Facilitated by the annual closing of the Stock Register, the more liquid position of the Company has enabled your Directors to anticipate earnings for the current year by declaring a dividend of 50 cents per dollar stock, less Income Tax at 30 per cent. The accelerated payment will, I am sure, be appreciated by stockholders.

Before concluding my address I must pay tribute to the loyal support we have had from the staff of the Company throughout Malaya. They have worked well and faithfully, and I am sure you will wish me to record our gratitude for the service they have given.

The Report and Accounts were adopted.

CENTRAL PROVINCES MANGANESE ORE

CONTINUED WORLD DEMAND

ONEROUS TAXATION BURDEN

MR. H. R. HOLMES ON THE RECORD RESULTS

The Forty-fourth Annual General Meeting of The Central Provinces Manganese Ore Co. Ltd., was held on June 4 in London, **Mr. H. R. Holmes,** chairman and managing director, presiding.

Mr. A. Linton, M.C. (director and secretary), read the notice convening the meeting and the report of the auditors.

The Chairman said: Ladies and gentlemen,—The report and accounts for the year ended December 31, 1951, have been in your hands for some time and I propose, with your permission, to take them as read. (Agreed.)

Before asking for your approval of the accounts I would like to make a few comments on the figures which appear in the balance sheet and profit and loss account.

In my speech to you last year I foreshadowed that the prospects for 1951 were satisfactory, and this has proved to be the case, as the balance on trading account at £1,937,389 constitutes a record for the company. It has been possible to achieve these results owing to the continued demand for our ore in the world's markets and to the prices at present prevailing.

Owing primarily to the large amount which has to be provided for taxation—namely, £1,257,500—the net profit available for the year is only £643,386. The question of taxation is a very serious one as the company is subject to the full rate of tax obtaining in India, and in the absence of any tax convention between that country and the U.K., we get relief in this country only, and that relief is limited to approximately 75 per cent of the U.K. taxes.

I would here like to mention that, apart from the £939,500 paid in respect of Indian taxes, considerable benefits accrue to the Government of India from our manganese ore business. The export duty on the ore we shipped during 1951 amounted to more than half-a-million pounds, while royalty on the ore railed was over £110,000, making altogether a total of more than one-and-a-half million pounds. In addition, we give employment to many thousands of Indians, whose wages and the many amenities provided for them amount to a very large sum annually.

Income from investments is higher at £30,500, as compared with £17,125, due to the increase in our holding of British Government securities.

On the other side of the profit and loss account, the sum charged for depreciation of fixed assets is higher. This, of course, is due to the fact that as we continue our programme of mechanization the amount of capital invested in plant and machinery increases.

APPROPRIATIONS

Your directors recommend that out of the net profit available the following appropriations should be made: To staff benefit fund £20,000, to workers' welfare fund £10,000, to general reserve £100,000. An interim dividend of 1s. per unit, free of tax, has already been paid and it is proposed that a final dividend of 2s. per unit, free of tax, plus a bonus of 2s. per unit, free of tax, should be paid, together absorbing £500,000.

This will leave £185,066 to be carried forward as compared with the amount of £176,357 brought in.

With regard to the allocation of £20,000 to the staff benefit fund, it is essential that this fund should be built up whenever we can afford to do so, in order to provide something for our staff, both European and Indian, when the time comes for them to retire. With taxation at the present level it is impossible for anyone to save sufficiently for retirement, as you all must know, and I feel sure that this allocation will have your approval.

WORKERS' WELFARE

The Government of India are very keenly interested in the welfare of all work-people in industry and your directors have no hesitation in recommending the allocation of £10,000 to the Workers' Welfare Fund. From the accounts you will see that during 1951 the sum of £8,170 was spent on various projects for the welfare of our work-people. These projects were decided upon in consultation with the trade union and the representatives of our labour force.

The health of our labour force in India continues to be good, and constant attention is being given to housing, sanitation, water supply and the control of malaria.

In the accounts we have also provided for a sum sufficient to give those of our work-people who qualify for it by service during the year a cash bonus on similar lines to that drawn by the staff. The Contributory Provident Fund for our work-people, to which I referred last year, came into operation from January 1, 1952.

These are very important matters and it is most desirable that our relations with our labour force should continue on the same satisfactory footing as they have been for many years past.

BALANCE SHEET FEATURES

Turning to the balance sheet, you will notice on the assets side that the value of stocks of manganese ore has fallen from £628,363 to £530,828. Railings during the year were not sufficient to equal our forward sales and we had consequently again to encroach on our stocks to some extent, in the endeavour to meet these commitments.

Sundry debtors and payments in advance have risen from £74,139 to £202,544, which is due to an increase in the tonnage afloat at the end of the year and to payments for machinery.

The only other point on the assets side to which I need draw your attention is the increase in the total of British Government securities, tax reserve certificates, and cash, which together amount to £2,472,799, against £2,037,976. There is, on the other hand, a substantial increase, principally in respect of taxation, on the liabilities side.

DIRECTORS' VISITS

Early this year two of your directors—Mr. Linton and myself—visited the United States of America with the object of keeping in touch with our very important customers there, who are the largest producers of ferro-manganese in the world. Our object was also to fix up further contracts with them, which we were able to do on satisfactory terms. Although I have said this before, I would not like this opportunity to pass without expressing our keen appreciation of the great understanding of our problems that they showed, and also of their very kind hospitality to us during our visit.

During the past winter two other of your directors—Major Herring and Mr. Bartlett—visited the mines in India, when they made a thorough examination of the mines and settled several outstanding problems. They submitted full and informative reports to the Board, and there is no doubt that these periodic visits to the mines by members of the Board are of the utmost value to the company.

MINES IN GOOD CONDITION

Generally speaking, our mines are in very good condition, with development work well ahead of ore extraction. The mechanization of some of the mines is proceeding, and as I have mentioned previously, this is very necessary, as we cannot get the number of work-people that we require.

With regard to diamond drilling, our immediate programme at Balaghat and Ukwa mines is completed and the plant has now been transferred to our Kandri mine.

Last year I referred to a heavy media separation plant which we are to instal at our Dongri Buzurg mine to extract the manganese ore from our old dumps there. Much of the machinery for this has now been shipped to India, and I hope that we shall have it erected and working by the end of this year.

I am glad to be able to say that there is considerably less delay than formerly in the granting of import licences by the Indian authorities.

The demand for our ore in the world's markets continues to be in excess of the amount available, and prices remain firm.

Railings are one of our constant anxieties particularly during the first half of each year, which is the dry season, and this has again been the case this year. Nevertheless, assuming that there will be the normal improvement during the second half, I think I may say that the prospects for the current year's trading are satisfactory.

TRIBUTE TO STAFF AND AGENTS

Again I have pleasure in acknowledging the excellent work of the staff both in India and in London, and also of our shipping agents in India, Messrs. James Finlay & Co. Ltd. I am sure that they will appreciate the thanks of the stockholders which, with your approval, I propose to convey to them. We have a good staff, and I would particularly like to mention again our agent and general manager in India, Mr. W. A. Hardy. In addition to the general supervision of the work on the mines, he has to deal with many matters of considerable complexity, and largely as a result of his efforts I am glad to say that our relations with the Government authorities in Delhi and with the Provincial Government continue on a satisfactory basis.

I now beg to move: "That the report of the directors and statement of accounts as at December 31, 1951, be and are hereby approved and adopted, and that the profits be appropriated as recommended by the directors." I will ask Major Herring to second the motion, and before putting it to the meeting, I shall be glad to deal with any questions which stockholders may wish to ask.

Major A. C. Herring, V.C., A.C.A., seconded the resolution, which was carried unanimously.

The Board's proposal of a final dividend of 2s. per unit, free of tax, and a bonus of 2s. per unit, free of tax, was also approved.

The retiring director, Mr. L. H. Bartlett, O.B.E., was re-elected, and the remuneration of the auditors, Messrs. W. A. Browne & Co., having been fixed, the proceedings terminated with a vote of thanks to the chairman, directors and staff, both at home and abroad.

THE BRITISH SOUTH AFRICA COMPANY

The Annual Meeting of The British South Africa Co. was held on May 29 at the Chartered Insurance Institute; 20, Aldermanbury, London, E.C.2, **Sir Dougal O. Malcolm, K.C.M.G.** (the President), in the chair.

The Secretary (Mr. W. H. White) read the notice convening the meeting and the report of the auditors.

The Chairman said: The share capital of the Shabani Railway Co., which was a subsidiary, having been sold, we are now able to bring out our consolidated accounts at a more reasonable date.

Let us now turn to our company's profit and loss account for the year under review ended on September 30, 1951. You will see that our profit at £2,723,209 is very nearly double that of last year, which was £1,460,742. This great improvement is, of course, due mainly to the increase of nearly £2,500,000 from a little over £3,000,000 to over £5,500,000 in our revenue from our mineral rights. This, of course, is due in the main to an increase in the amount of copper produced in Northern Rhodesia from 265,000 tons odd to 297,000 tons odd, and to a great increase in the price of that production, on which our royalties are based, from just under £36,500,000 to nearly £56,000,000. The same is true though the figures are smaller, of the production of zinc, lead, vanadium and cobalt.

Our income from investments, interest and underwriting commission, and interest on tax reserve certificates at £825,825 compares with last year's figure of £575,050, and our net profits on realization of investments, less amount written off, at £204,934, compares with last year's figure of £69,651.

On the other side you will see that after again providing for the writing off of a sum of £50,000 from the figure at which our mineral rights, commissions, land and land rights, stand in our balance-sheet, which writing-off I explained last year, our expenses at £246,726 compared with last year's figure of £229,809, this figure being mainly accounted for by an increase of about £13,500 for interest and further amount credited to staff superannuation account.

Taxation for the year has increased by about £1,600,000 to £3,735,129. This, of course, is an inevitable, though not welcome, increase resulting from our great increase in profits.

As regards our balance-sheet, I think I need only mention the increase in our reserve for future United Kingdom taxation to just under £1,300,000 from a little under £674,000, and in the figure of unappropriated profits to just under £3,320,000 from just under £2,100,000.

The figure for staff superannuation account has risen to £393,000 odd from a little under £261,000.

In the past, retirement benefits have been provided, only for our office staffs. In recent years we have found it increasingly difficult to retain the services of the right type of personnel for our estates, and we are now, with effect from the beginning of October, 1950, admitting all members of the company's staff, whether employed in the offices or in the field, to the benefits of the staff superannuation scheme. We hope that this additional incentive will encourage the staff upon our estates to remain with us permanently. You will see from the profit and loss account that it has been necessary to provide a sum of just over £121,000 to meet the additional liability in respect of service prior to September 30, 1950.

Current liabilities under the heading creditors at £539,774 compare with last year's figure of £328,209 and provisions for United Kingdom taxation and Dominion income-tax at £2,814,388 compare with £1,729,265.

On the credit side the figures under the headings fixed assets and subsidiary companies show little change. The unclaimed dividend fund has risen to £511,000 odd from £175,000 odd, due to a large proportion of the dividend due in March, 1951, having been unclaimed at the date of the balance-sheet.

The cost of our shares in subsidiary companies shows very little change.

Apart from these, our investments at just under £9,129,000 compare with last year's figure of a little over £8,977,000.

Of the above the quoted investments showed at the date of the balance-sheet a marked appreciation of £5,471,000 odd. Since the date of the balance-sheet we have invested rather more than a further £1,000,000. But there has been, as you know, a heavy fall in security prices during the last eight months and our latest overall figure of appreciation which I have is one of just under £3,000,000.

Current assets at £5,929,000 odd compare with last year's figure of £2,836,000 odd, due to an increase of about £500,000 in debtors, of over £500,000 in tax reserve certificates, and of over £2,000,000 in balance at bankers and cash in hand.

These figures I am sure you will agree reflect a very strong position. We have had to consider very carefully our dividend policy and you may feel that, in the light of an increase in our profit for the year under review of about £1,260,000 as compared with last year's figure, our proposed final dividend for the year of 26 2-3rds per cent, which with the interim dividend of 13 1-3rd per cent paid last No ember brings the total for the year to 40 per cent, or 6s. per unit of stock or share of 15s., as compared with last year's 33 1-3rd per cent, or 5s., absorbing £1,379,779 as cent, or 6s. per unit of stock or share of 15s., as compared with last year's 33 1-3rd per cent, or 5s., absorbing £1,379,779 as compared with £1,204,569, is a very modest one. At least you will agree that we have taken very full account of the Chancellor of the Exchequer's adjuration in his Budget Speech that there should be what he calls a "sane policy of dividend limitation."

We have also had to take into account the probable effect on our fortunes of the proposed excess profits levy, assuming that the Finance Act will impose a levy substantially in accordance with the Budget proposals as they seem likely to be amended by Parliament. We are concerned not to propose a dividend which, so far as we can at present foresee, we should not be able to maintain. As to this, though I am very reluctant to indulge in prophecy, I can only say that if things remain as they are now, that is to say if the output and price of minerals from Northern Rhodesia, particularly copper, remains as it is now, we calculate that we should be able to maintain a dividend of 6s. notwithstanding that, so far as we can see, the excess profits levy on the average of the year now current and of next year, beginning on October 1 next, may cost us something in the neighbourhood of £1,000,000 a year.

You will not, I am sure, forget that there is "much virtue in an 'if'," and all that I say is qualified by the condition "if" "the output and price of the minerals, with which we are so deeply concerned, remains as it is now." As to that, the production of copper from Northern Rhodesia which, as you have been told, amounted during our year under review to 297,380 tons at an average price as calculated for our royalty purposes of £186 7s. per ton, has so far proceeded during the first six months of the year now current at the rate of 301,850 tons for a full year at a corresponding price of £209 11s. per ton, and this notwithstanding continued difficulties in the matter of fuel supply to the mines. But we must not forget the possibility of changes which we cannot control, or the chapter of accidents. Certainly the four great copper producing mines of Northern Rhodesia and Rhodesia Broken Hill Development Co. are very prosperous, and they are not all. The opening up of some new important copper mines is in prospect, and new large-scale prospecting enterprises covering large areas of Northern Rhodesia are being vigorously pursued. But we should not try to see too far into the future.

PROVISION OF AMPLE FUNDS

Meanwhile our very modest dividend proposal will enable us to add no less than £1,222,000 odd to unappropriated profits, thus furnishing us with ample funds for the prosecution of the policy which I endeavoured to lay before you last year of building up a great body of long-term investments not only in Rhodesi .. but in other South African enterprises, particularly mining enterprises, in regard to which, along with our business associates and friends, we have good opportunities of keeping ourselves well informed.

Thus we may hope in the course of the years to build up a great body of assets to take the place, at any rate to some extent ,of our Northern Rhodesia Mineral Rights, which, as you know, will come to an end in September, 1986. That date is still thirty-four years off—a long time—but we must not allow ourselves to forget it.

The report and accounts were unanimously adopted, and the dividend of 40 per cent for the year was approved.

DIVIDENDS

Bangrin Tin Dredging 25% *i* (June 18)
Broken Hill South 80% *i*
Bulolo Gold Dredging 25c. *i* (June 12)
Cape Asbestos Co. 20%
Consolidated African Selection Trust 1s. *i* (June 13)
General Mining and Finance Corp. 3s. (June 16)
Globe & Phoenix Gold 50% (June 27)
Gopeng Consolidated 12½% *i* (June 21)
Idris Hydraulic Tin 3d. (June 16)
International Nickel Co. of Canada 50c. (June 20)
London Tin Corporation 5% *i* (June 26)
Minerals Separation 50%
New Broken Hill Consolidated 30% (July 1)
Noranda Mines $1 *i*
North Broken Hill 3s. 6d. (June 24)
Oceana Development 10% (June 10)
Offin River Gold 5% *i*
Placer Development 75c. *i* (June 18)
Rhodesian Selection Trust 9d. *i* (June 10)
Siamese Tin Syndicate 50% *i* (June 11)
South Crofty 3d. *i* (June 30)
Transvaal and Delagoa Bay 10% *i*
Trinidad Central Oilfields 22½%

i interim • Tax free

CROWN MINES LIMITED

The Fifty-Sixth Annual General Meeting of Shareholders was held in Johannesburg on May 28.

Mr. W. H. A. Lawrence, Chairman, presided and in the course of his speech said:

The position at the mine, as you will have observed from these reports, is causing anxiety. The labour strength, both European and native, continues to be far below requirements, thereby restricting output to below the capacity of the plants and adversely affecting operations in other directions. This fact in itself is serious, but what is of graver concern is the steady and persistent decline in values and percentage of payability on the Main Reef Leader with increasing depth. This unfortunate feature coupled with the extent to which working costs have risen must seriously affect the economic prospects of the ore remaining in the property below the present levels.

The figures given in the tabulation in the consulting engineer's report clearly indicate the degree of the falling off during last year in the tonnage and grade of the ore milled, resulting in a decrease of 51,514 f.oz. in the total gold recovered as compared with the previous year.

This serious decline coupled with the increased working costs reduced the margin of profit by 3s. 10d. per ton milled. These factors caused the working profit to diminish by the substantial amount of £695,728 despite an increase of £218,973 in the additional revenue received during the year from the sale of gold at enhanced prices.

The higher cost of commodities and further wage concessions granted to employees throughout the gold mining industry caused working costs to continue to rise steadily during the year until they reached the average figure of 38s. 7d. per ton milled for the last quarter of the year, as compared with the average of 35s. 10d. per ton milled for the whole year.

The following tabulation which compares the salient details of results during the first four months of the current year with those for the same period of 1951 reflects the continued effect of the adverse operation conditions:

	Jan./Apl. 1952	*Jan./Apl.* 1951	*Inc. or Dec.*
Tons milled	1,044,000	1,063,000	Dec. 19,000
Yield per ton milled.....	3.286 dwt.	3.485 dwt.	Dec. 0.199 dwt.
Working revenue.....	£2,136,778	£2,306,493	Dec. £169,715
Working revenue per ton	40s. 11d.	43s. 4d.	Dec. 2s. 5d.
Working costs	£2,007,555	£1,840,124	Inc. £167,431
Working costs per ton...	38s. 5d.	34s. 7d.	Inc. 3s. 10d.
Working profit.....	£129,223	£466,369	Dec. £337,146
Working profit per ton...	2s. 6d.	8s. 9d.	Dec. 6s. 3d.
Additional revenue from sales of gold at enhanced prices ...	£73,511	£131,404	Dec. £57,893
Development footage ...	31,663	37,266	Dec. 5,603

There are small tonnages of the Main Reef and South Reef still to be mined, but the Main Reef Leader is now the only reef of economic importance and is being worked at depths approaching 9,000 ft.

In my address last year I informed you of the intersection of a strike dyke in the south-eastern portion of the mine. Work carried out during 1951 and to date in the current year has indicated that the dyke, which varies from 280 to 600 ft. in thickness, persists for at least two-thirds of the width of the property at a depth of about 9,000 ft. The Reef has been thrown down more than 500 ft. on the south side of the dyke. The question of the future of this southern area is at present under close investigation from all angles and particularly in the light of the heavy capital expenditure which would be necessary on shaft sinking and development to open it up beyond the dyke at nearly 10,000 ft. below the surface. The fact that values to the north of the dyke are generally unpayable, coupled with the poor values intersected in boreholes and in the limited development done south of the dyke, indicates that economic exploitation of the area below the dyke is improbable. Although the working life prospects of the mine have been seriously jeopardized by these developments there are certain factors which will tend to arrest further declines in working profits in the immediate future. The reduced scale of incline shaft sinking and development at depth will help to affect any minor increases in working costs that may take place

All mines are wasting assets and Crown Mines is no exception to the rule. In recent months the unexpectedly severe increase in working costs which has taken place throughout the gold mining industry, together with the serious shortage of native labour and such local difficulties as the big strike dyke to which I have referred and a general falling off in the mine grade, have combined to accentuate sharply the waning prosperity of your mine. There are, however, as I have already indicated, certain aspects of the situation which give ground for modest encouragement. Considerable progress has already been made with the task of arresting the rapid deteriorating of the position which has taken place since our meeting last year.

The Report and Accounts were adopted.

CITY DEEP LIMITED

The Fifty-First Annual General Meeting of Shareholders of City Deep Ltd. was held in Johannesburg on Wednesday, May 28, 1952. **Mr. G. V. R. Richdale,** Chairman, presided and in the course of his speech said: The net profit in 1951 at £1,090,038 was £379,350 lower than in the previous year. This fact, coupled with the serious decline which has taken place in recent monthly profit declarations, has no doubt been a cause of disappointment for Shareholders, as it has been for your Board.

When seeking the reasons for this deterioration of the profit position two main factors must be taken into consideration, lower gold recovery and the upward trend of working costs. Until the series of sub-incline shafts which are being sunk from the 45th Level of the mine on the 8,500 ft. horizon are in commission it is necessary to draw a greater proportion than usual of the ore for the mills from the lower-grade South and Main Reefs in the upper levels of the mine, which naturally has an adverse effect on gold recovery. Furthermore, as was forecast at the Annual Meeting last year, increased development in this upper area has resulted in a reduction in the average grade of ore developed. Shortages of steel and cement during 1951 retarded operations in these sub-incline shafts, and as a consequence it is unlikely that they will be sufficiently advanced before 1954 materially to affect the tonnage reaching the mill from the Main Reef Leader in the lower levels. It is hoped, however, that when full-scale stoping operations can be undertaken from them the average grade of ore mined will show an improvement.

It is unfortunate that during this difficult transitional stage, while these plans for the development of the mine in depth are being implemented, your Company should be called upon to face steadily rising costs. Working costs, which amounted to 39s. 2d. per ton milled in 1950, rose by 2s. 9d. to 41s. 11d. per ton milled in 1951, the advance being due partly to further increases in wages and benefits to employees, and partly to a sharp rise in the cost of stores.

While dealing with the question of costs, I would like to draw the attention of Shareholders to the fact that approximately 35 per cent of stoping operations in the mine is carried out by the resue method which, while it increases appreciably the grade of ore sent to the mill, results in higher working costs. This point should be borne in mind when comparing the Company's level of mining costs with that of other mines, and it should be understood that while the adoption of open stoping methods throughout the City Deep would reduce working costs per ton milled it would also result in a considerably lower average grade and on balance a reduced working profit. I may add that it is only in Main Reef Leader stopes that conditions are suitable for this method of mining.

The total footage developed during the year at 54,883 ft. was 4,837 ft. less than the figure for 1950. The footage sampled was slightly greater than in the previous year although due to the fact that, as I have explained, a greater proportion than usual of the total development was carried out on the lower grade South and Main Reefs in the upper levels of the mine, only 8,250 ft. or 32.8 per cent were classed as payable compared with 11,925 ft., or 48.1 per cent, in 1950, while the average value of payable disclosures fell from 15.9 dwt. over 24 in. to 14.2 dwt. over 23 in. As an indication of the effect of the present development programme, it is of interest to note that the percentage contributed by the Main Reef Leader to total payable disclosures fell from 70.7 per cent in 1950 to 64.3 per cent in 1951, while that contributed by the South Reef rose from 21.6 per cent to 28.9 per cent. Furthermore the percentage payability of the Leader Reef fell from 62.1 per cent to 45.3 per cent, while that of the lower grade South Reef fell from 39.5 per cent to 24.4 per cent. For the reasons that I have given, however, it would be misleading to attach undue significance to the decreases in the footage developed and in the percentage payability.

In common with the majority of gold mining companies, City Deep experienced during the year a severe decline in the supply of non-European labour, which is becoming an increasingly difficult problem exercising the active attention of the industry as a whole more now than ever before. The shortage of electric power on the Witwatersrand, which is likely to continue for the next few years, is another factor which tends to increase the difficulties of maintaining profits at the 1950 level.

It was expected that capital expenditure incurred during 1951 would be of the order of £650,000. Owing to shortages of steel and cement, the amount actually spent on capital equipment was only £211,306, most of this sum being incurred in connection with the deep level sub-incline shafts and the extension of the City reduction plant. Capital receipts from sales of freehold reduced this sum to a net figure of £193,403, to which was added £27,985 as an adjustment to the cost of the acquisition of the Nourse Mines Ltd. property, bringing the net capital expenditure for the year to £221,388.

The Report and Accounts were adopted.

ROSE DEEP LIMITED

MR. P. H. ANDERSON'S ADDRESS

The Fifty-Sixth Annual General Meeting of Shareholders was held in Johannesburg on May 27, **Mr. P. H. Anderson,** Chairman, presided and said: In my address last year I concluded my remarks by saying that unless every possible effort were made to counter the inflationary spiral in South Africa the costs of mining were likely to be seriously affected. Since then, while there have been signs of a break in prices overseas, there have unfortunately been further increases locally in the prices of such basic commodities as foodstuffs and steel which can only effect the cost spiral in South Africa adversely. It is, therefore, not only the material rise in mining costs which has already taken place that is causing concern but also the prospects of a continuation of this rise. The increase in working costs of the South African gold mining industry for 1951 compared with 1950 was from 29s. 7d. per ton milled to 31s. 10d., equivalent to about 7 per cent. The increase at Rose Deep for the same period was approximately 8 per cent, costs rising from 27s. 11d. to 30s. 3d. per ton milled.

A most useful yardstick for measuring the relative economic position of a gold mine is the pay limit, as this is largely based on the relationship between the price of gold and the cost per ton milled. Just before devaluation in 1949 when the price of gold was 172s. 6d. per oz., working costs at Rose Deep were about 25s. per ton milled. The overall pay limit at that time was therefore about 2.9 dwt. per ton. The price of gold was then increased to 248s. 3d. per oz. which, with costs at the same level of 25s. per ton, meant a decrease in the pay limit to 2.0 dwt. per ton. Since then, however, costs have increased steadily during the 2½ years since devaluation to 31s. 4d. for the first quarter of 1952, which has brought the overall pay limit back to 2.5 dwt. per ton. Much of the increased profit-earning capacity brought about by devaluation has therefore been absorbed.

BURDEN OF INCREASED PRICES

Although the Company has received some recompense due to the additional revenue from sales of gold at enhanced prices, the proportion of profits available for distribution to Shareholders has been seriously and adversely affected not only by the high rate of taxation, but also by the increasing amount of cash that has to be diverted to the purchase of stocks of stores at rapidly increasing prices in order to maintain these at a reasonable level. At the end of 1948 your company's stocks of stores and materials stood at £85,690. At the end of 1951 the figure was £149,562, representing an increase of nearly £64,000 over the three years. During the same period the company's net cash surplus was depleted to the extent of about £49,000 from a surplus of £42,132 to a deficit of £7,036. As far as 1951 was concerned your company's normal working profit was equivalent to 6s. 11d. per share, sales of gold at enhanced prices 2s. 6d. per share, and net sundry revenue 5d. per share, the total profit being equivalent to 9s. 10d. per share. Taxation was equivalent to 3s. 4d., the increased cost of stores purchased for stock 1s. 3d., and 5s. 3d. per share was distributed to Shareholders by way of dividends. In addition to the amount that was diverted to maintain stocks of stores at a reasonable level, the actual cost of stores consumed—drawn partly from stocks built up in the past at lower than current prices, and partly direct from suppliers at current prices—increased during the year by about £26,000, equivalent to 9d. per share. The total increase in the monetary value of stores purchased during the year, either for stock or current consumption, was therefore equivalent to 2s. per share.

Working costs and profit were also adversely affected during the year by increased cost of living allowances, wages and other benefits paid to employees, by increased silicosis charges, by increased power costs and other factors. There was, however, a small improvement in the grade of ore mined and a substantial increase in the additional revenue derived from sales of gold at enhanced prices, so that the working profit was slightly higher in 1951 than in 1950.

FUTURE PROSPECTS

The prospects for the future are not as favourable in that working costs are still rising and the additional revenue from sales of gold is falling, the monthly average for the first four months of 1952 being £4,700 compared with a monthly average of £7,200 in 1951. In addition, it is essential that the net cash resources should be built up again to a reasonable level in order to place the company's finances on a sounder footing.

The Report and Accounts were adopted.

EAST RAND PROPRIETARY MINES LIMITED

The Fifty-Sixth Annual General Meeting of Shareholders was held in Johannesburg on Wednesday, May 28, 1952.

Mr. G. V. R. Richdale, Chairman, presided and said:

In common with the majority of gold mines on the Witwatersrand your Company's mine experienced a decline during the year in the supply of non-European labour and this factor contributed largely to the decrease, in comparison with the previous year, of 29,000 tons in the tonnage milled. Revenue on the other hand rose by 2s. 8d. to 53s. 6d. per ton milled, due partly to an improvement in the average grade of ore mined and partly to a substantial increase in the additional revenue received in respect of gold sold for non-monetary purposes. The improvement in revenue was, however, offset by an increase in working expenditure, which rose by 2s. 11d. to 34s. 11d. This advance in costs, which was occasioned by further increases in wages and benefits to employees and by a sharp rise in the cost of stores, brought about a decrease in the profit per ton milled, which at 18s. 7d. was 3d. less than during the previous year. As a result of these variations the net profit at £2,448,244 was £34,558 lower than in 1950.

On various occasions in recent years I have explained the system of longwall mining which is being carried out in the deep level areas of the mine and I have pointed out that this results in decreased reef development, with a consequential fall in the published ore reserve figures. The available ore reserve was re-estimated at December 31, 1951, to be 6,943,000 tons, which is only 112,000 tons less than at the end of 1950. Furthermore, this drop was mainly due to an increase in the pay limit caused by the rise in working costs, so that in the circumstances the ore reserve position can be described as very satisfactory.

The footage developed decreased by 1,518 ft. to 52,822 ft., while the total footage sampled, at 16,190 ft., was 3,280 ft. less than in 1950. Excellent values and high percentage payability were disclosed in the six pilot winzes which are being sunk in reef above a series of sub-incline shafts below the 8,000 ft. horizon. These winzes were advanced 4,021 ft. during the year and at April 30, 1952, a total of 5,446 ft. of reef had been exposed in this way below the 58th level over a strike distance of 19,200 ft. Of 5,120 ft. sampled, 4,390 ft. or 86 per cent was payable, averaging 17.6 dwt. over 36 in., equal to 634 in.-dwt. So long as disclosures in these winzes indicate such encouraging values and such high percentage payability it will be unnecessary to make any appreciable increase in the footage developed on reef each year. I would emphasize once more, however, that this is no indication of a shortening of the life, or a lessening of the potentialities, of the mine. Rather it is the reverse, for the excellent values disclosed by development at depth during the last two years have been considerably better than was expected when we decided to enter on the present heavy capital expenditure programme.

Sinking operations at the south-east vertical shaft proceeded satisfactorily during the year and the shaft has reached its final depth of 6,007 ft. below the surface. Work has now been commenced in connection with the sinking of the south-east sub-vertical shaft. It may be of interest to shareholders to know that the main station which is now being cut at the bottom of the central sub-vertical shaft is 9,450 ft. below the surface and is the deepest vertical shaft station in South Africa.

Owing to continued delays in the delivery of plant and equipment capital expenditure during 1951, which totalled £718,129 was considerably less than the estimated figure of £1,350,000 given at the Annual General Meeting last year. Shareholders will appreciate, however, that payment for equipment and material ordered for, but not delivered in, 1951 will probably be made during the current year. Capital funds on hand at December 31, 1951, amounted to £608,286 and although the continued rise in commodity prices has inevitably increased the cost of the capital programme, I still hope that this work can be completed without any serious encroachment on the dividend position.

Your Company's mine is more fortunately placed in regard to electric power than most mines on the Witwatersrand since it is able to meet a considerable proportion of its requirements from its own generating plant. The power position generally is becoming increasingly difficult, however, and it may possibly affect production during the next year or two.

The Report and Accounts were adopted.

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SOUTH CROFTY LIMITED

The Forty-Sixth Annual General Meeting of South Crofty Ltd., was held on May 28 in London.

Mr. T. Wallace Evans (Chairman), who presided, said: It is with very great regret I have to announce that our Chairman, Mr. Harry Rich, died suddenly in London on May 15.

The Chairman dealt with the principal features contained in the Statement issued by Mr. Harry Rich to the shareholders and said: At a Board Meeting your directors declared an interim dividend of 3d. per share—5 per cent—less tax, payable on June 30, as since the beginning of the year a small improvement has been made in our monthly production, which we hope, with the coming of foreign help, will be further increased.

Mr. D. D. Belcham, the Manager, addressed the meeting at the request of the Chairman and said: In order to give you an up-to-date picture of the company's affairs, I would draw your attention to the following facts:—

Output: You will have seen from the published returns that our output has gradually increased since the beginning of the year and this month we should exceed 36 tons of concentrates.

Development: The development footage has been increased and will be further advanced to catch up the arrears of under-development when the labour is available.

Pumping: The excavations for the permanent electric pumps are proceeding satisfactorily and every endeavour is being made to expedite the delivery of the new pumps.

Hostel: These buildings are nearing completion and arrangements are being made through the Ministry of Labour to interview Italian volunteers for underground work and it is hoped to have some of this labour by the end of June. This will materially help to increase the tonnage of ore and concentrates.

Castel-an-Dinas—The main electric supply has been brought to the Castel-an-Dinas Mine and last weekend the Beresford Submersible pumping unit was changed over to this form of power, thus eliminating the Murphy Diesel generating plant with its attendant stoppages for repairs and maintenance. Work is proceeding in preparation for shaft sinking to explore the lode below the present No. 7 level, and if the lode persists in payable values it will add materially to the life of the Mine.

General—When the main electric pumps are in operation, the pumping costs will be very considerably reduced, and they should pay for themselves in a comparatively short number of years. Should nothing unforeseen occur and providing the price of tin remains at an economic figure, the development and ore reserves are such that the future of the mine is assured.

The report was adopted.

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The figures given indicate the values we placed on these items of plant but we are prepared to give favourable consideration to any offer which may be submitted for any items and any further information which may be required can be obtained from Dow-Mac (Plant & Transport) Limited, Tallington, Stamford, Lincs.

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ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LTD.

(Incorporated in the Union of South Africa)

ABRIDGED REPORT OF THE DIRECTORS FOR THE YEAR ENDED DECEMBER 31, 1951

The profit for the year after providing for taxation was £2,894,345 as compared with £2,339,780 for the year 1950. An amount of £850,000 was placed to General Reserve which now stands at £13,500,000.

The companies in which the Corporation was directly interested at the 31st December, 1951, are set out below, the companies administered by the Corporation being shown in heavy type.

FINANCE AND INVESTMENT COMPANIES—African and European Investment Co. Ltd. **Anglo American Investment Trust Ltd.** Central Mining Free State Areas Ltd. **The New Era Consolidated Ltd. Orange Free State Investment Trust Ltd. Rand Selection Corporation Ltd.** Rhodesian Anglo American Ltd. **South African Mines Selection Ltd. West Rand Investment Trust Ltd.**

GOLD (PRODUCING)—Brakpan Mines Ltd. Daggafontein Mines Ltd. East Daggafontein Mines Ltd. Grootvlei Proprietary Mines Ltd. Rand Leases (Vogelstruisfontein) Gold Mining Co. Ltd. **The South African Land & Exploration Co. Ltd. Springs Mines Ltd.** Vlakfontein Gold Mining Co. Ltd. **Welkom Gold Mining Co. Ltd.**

GOLD (PROSPECTING AND DEVELOPING)— Freddies North Lease Area Ltd. Freddies South Lease Area Ltd. **Free State Geduld Mines Ltd.** General Exploration, Orange Free State Ltd. **Jeannette Gold Mines Ltd. Loraine Gold Mines Ltd. President Brand Gold Mining Co. Ltd. President Steyn Gold Mining Co. Ltd.** Stilfontein Gold Mining Co. Ltd. **Vaal Reefs Exploration & Mining Co. Ltd. Western Holdings Ltd. Western Ultra Deep Levels Ltd.** Withok Proprietary Co. Ltd. Witwatersrand Deep Ltd.

BASE METALS—Mufulira Copper Mines Ltd. Munnik Myburgh Chrysotile Asbestos Ltd. Nchanga Consolidated Copper Mines Ltd. The Rhodesia Broken Hill Development Co. Ltd.

COAL—The Vereeniging Estates Ltd.

INDUSTRIAL AND SUNDRY—African Cables Ltd. American Anglo-Transvaal Investment Corporation Ltd. **Anglo American Prospecting Co. Ltd. *Anmercosa Land & Estates Ltd.** East Rand Engineering Co. Ltd. Eriksen Consolidated Holdings Ltd. **First Electric Corporation of South Africa Ltd. Hard Metals Ltd.** Industex Ltd. James Thompson Ltd. National Finance Corporation of South Africa. New Monteleo Ltd. **Orange Free State Land & Estate Co. (Proprietary) Ltd.** Rhodesian Alloys Ltd. Tanganyika Concessions Ltd. ***Zinc Products Ltd.**

*Subsidiary Company.

Finance and Investment Companies:

THE NEW ERA CONSOLIDATED LTD.—This Company's principal interests are represented by its shareholdings in the gold and diamond mining concerns of the Anglo American Group. The gross revenue for the year was £197,576, which was an increase of £23,519 as compared with last year's figure. The net profit rose by £21,624 to £173,285.

RAND SELECTION CORPORATION LTD. (Year ended September 30, 1951)—As a result of the offer made by Rand Selection Corporation Ltd. to shareholders in South African Townships, Mining & Finance Corporation Ltd., Rand Selection Corporation Ltd. acquired 3,955,774 South African Townships shares representing approximately 82 per cent of the issued capital of that Company, which is therefore now a subsidiary of Rand Selection Corporation Ltd.

SOUTH AFRICAN MINES SELECTION LTD.—The revenue for the year, which amounted to £171,212, showed an increase of £40,816 when compared with the revenue for the previous year. The net profit amounted to £157,098, which, when added to the balance of profit brought forward from the previous year of £170,676, gave a total of £327,774.

The Company's principal shareholdings are in the following: African & European Investment Co. Ltd. Blesbok Colliery Ltd. De Beers Industrial Corporation Ltd. Free State Geduld Mines Ltd. Free State Mines Selection Ltd. General Exploration (O.F.S.) Ltd. Harmony Gold Mining Co. Ltd. Jeannette Gold Mines Ltd. Loraine Gold Mines Ltd. Munnik Myburgh Chrysotile Asbestos Ltd. Natal Anthracite Colliery Ltd. Natal Coal Exploration Co. Ltd. New Largo Colliery Ltd. New Monteleo Ltd. Orange Free State Land & Estate Co. (Proprietary) Ltd. President Brand Gold Mining Co. Ltd. President Steyn Gold Mining Co. Ltd. Rhodesia Monteleo Asbestos Ltd. The Vereeniging Estates Ltd. Vierfontein Colliery (Proprietary) Ltd. Welkom Gold Mining Co. Ltd. Western Holdings Ltd. Wit. Extension Ltd.

AFRICAN & EUROPEAN INVESTMENT CO. LTD.—The Company's principal shareholdings are in: Amalgamated Collieries of South Africa Ltd. Blesbok Colliery Ltd. Grootvlei Proprietary Mines Ltd. Lydenburg Estates Ltd. Munnik Myburgh Chrysotile Asbestos Ltd. Natal Anthracite Colliery Ltd. Natal Coal Exploration Co. Ltd. New Central Witwatersrand Areas Ltd. New Largo Colliery Ltd. New Monteleo Ltd. Orange Free State Investment Trust Ltd. Orange Free State Land & Estate Co. (Proprietary) Ltd. President Brand Gold Mining Co. Ltd. President Steyn Gold Mining Co. Ltd. Rhodesia Monteleo Asbestos Ltd. St. Helena Gold Mines Ltd. The Coronation Collieries Ltd. The Newcastle-Platberg Colliery Ltd. The Union Steel Corporation (of South Africa), Ltd. The Vereeniging Estates Ltd. Vereeniging Brick & Tile Co. Ltd. Vierfontein Colliery (Proprietary) Ltd. Vryheid Coronation Ltd. Welkom Gold Mining Co. Ltd. Western Ultra Deep Levels Ltd.

The profit of the African & European Investment Co. Ltd. for 1951 was £856,531 as compared with £668,620 for the previous year. In addition the net surplus on realization of certain capital assets was £179,369. Preference and Ordinary dividends paid amounted to £413,523.

Producing Gold Mines in the Transvaal:

As compared with 1950, the tonnage milled by the mines of the Group decreased by 15,500 to 9,974,500. The revenue per ton was 3d. higher but working costs were 1s. 11d. per ton more and the profit per ton was 1s. 8d. less. The grade of ore mined was lower, total ounces produced being 59,613 less, but additional revenue resulting from sales of gold at premium prices for industrial and artistic uses resulted in a substantial increase to the revenue, which was more than sufficient to offset the fall in grade.

West Rand Interests—The Corporation has a very substantial interest in West Rand Investment Trust Ltd., through which Company the Corporation's interests in the Far West Rand and in the Klerksdorp area are held.

Orange Free State Interests—On January 1, 1947, sinking operations started on the first shaft in the Orange Free State on the property of St. Helena Gold Mines Ltd. In the five years since that date this goldfield, stretching almost continuously for thirty miles, has been the scene of uninterrupted activity.

Two mines have recently reached production and are earning profits. During 1952 a further two mines are expected to reach production.

LORAINE GOLD MINES LTD.—Shaft sinking operations at this mine have been very successful and the speed of advance in No. 1 Shaft has constituted a record for rectangular shafts in the Orange Free State.

PRESIDENT BRAND GOLD MINING CO. LTD.—By the end of March, 1952, No. 1 Shaft had reached a depth of 3,946 ft., which is about 500 ft. above the estimated level of the Basal Reef, and No. 2 Shaft had been sunk to a depth of 2,999 ft.

PRESIDENT STEYN GOLD MINING CO. LTD.—Some delays were experienced through the intersection of water-bearing fissures, but good progress was made in shaft sinking on this mine during 1951.

WELKOM GOLD MINING CO. LTD.—During October, 1951, the main haulage connecting the two shafts on the 2,750 ft. level was completed and it was possible to begin stoping operations on a limited scale early in November.

Since November 1 the tonnage derived from stoping operations has been gradually increased and the stoping width has been decreased. The mine is now returning a monthly working profit.

WESTERN HOLDINGS LTD.—Towards the end of the year both shafts on the Company's property intersected the Basal Reef with very satisfactory results.

Diamond Interests—The Corporation maintains its interest in the diamond business through a large shareholding in: ANGLO AMERICAN INVESTMENT TRUST LTD.

The Company made a profit for the year 1951 of approximately £2,246,000 after providing for taxation, and dividends declared were increased by 5s. per share, totalling 12s. per share.

RHODESIAN ANGLO AMERICAN LTD.—The profit for the year was £3,343,334 compared with £1,998,948 (adjusted) for the year ended June 30, 1950. Dividends for the year ended June 30, 1951, totalled 5s. 6d. per Unit of Stock, and an interim dividend of 1s. 3d. per unit has recently been declared in respect of the year ending June 30, 1952.

RHOKANA CORPORATION LTD.—Copper production increased from 80,075 l.tons of anode and blister copper for the year ended June 30, 1950, to 82,958 l.tons for the year ended June 30, 1951. 667 l.tons of cobalt were produced as against 660 l.tons for the previous year. The new Electrolytic Cobalt Refinery was started up recently.

NCHANGA CONSOLIDATED COPPER MINES LTD.—During the year ended March 31, 1951, 58,052 l.tons of anode and blister copper were produced compared with 38,761 l.tons for the previous year. In addition to the smelting of concentrates at Nkana, arrangements were made for smelting to be carried out by Mufulira Copper Mines Ltd. and Roan Antelope Copper Mines Ltd. The profit for the year was £4,977,843, being £3,446,533 more than for the year ended March 31, 1950, and a dividend of 7s. 6d. per Unit of Stock was declared for the year.

THE RHODESIA BROKEN HILL DEVELOPMENT CO. LTD.—Production figures in l.tons are as follows:

Zinc	22,590
Lead	13,970
Fused Vanadium Oxide	167 (91.32% V_2O_5)

The profit for the year ended December 31, 1951, was £5,749,168, the previous year's figure being £2,762,875.

Metal and Mineral Trades

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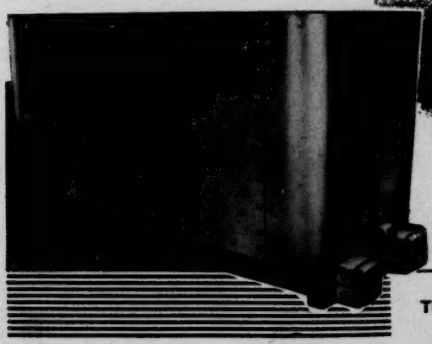

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